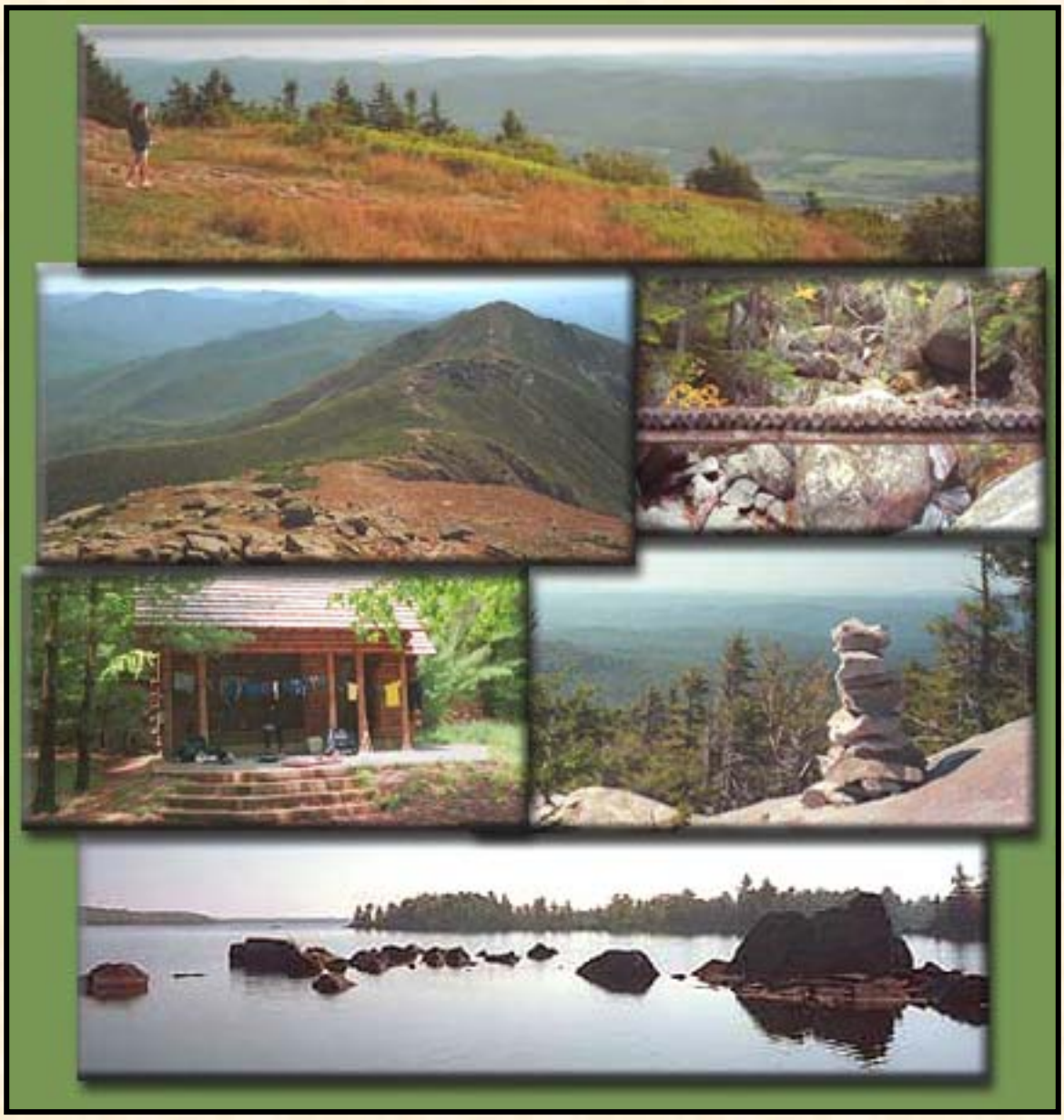
APPALACHIAN NATIONAL SCENIC TRAIL
FIRE MANAGEMENT PLAN



DRAFT ENVIRONMENTAL ASSESSMENT
DECEMBER 2004

Appalachian National Scenic Trail
Fire Management Plan – Draft Environmental Assessment

National Park Service
U.S. Department of the Interior

Appalachian National Scenic Trail
Harpers Ferry Center
Harpers Ferry, WV 25425

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United States Department of the Interior

IN REPLY REFER TO:

NATIONAL PARK SERVICE
Appalachian National Scenic Trail
Harpers Ferry Center
Harpers Ferry, West Virginia 25425

DEC 17 2004

Dear Interested Party,

Enclosed is a copy of the **Appalachian National Scenic Trail Fire Management Plan Environmental Assessment** for your comment and review. This environmental assessment was prepared pursuant to the National Environmental Policy Act (NEPA). Our records indicate that you have participated in the planning process or have requested to receive copies of the park's planning documents.

National Park Service Wildland Fire Management Guidelines (DO-18) mandates, "All parks with vegetation that can sustain fire must have a fire management plan." The purpose of this federal action is to develop a fire management plan and program that utilizes the benefits of fire to achieve desired natural and cultural resource conditions while minimizing the fire danger to park resources and adjacent lands from hazardous fuel accumulations.

Based on the analysis, I consider Alternative 2 to be the Park's preferred alternative for best accomplishing the purpose and need for this Proposed Action. Under this alternative, fire management activities would protect park resources and adjacent lands from the threat of wildland fires. This alternative also best protects and helps preserve the historic, cultural, and natural resources in the park for current and future generations.

Additional information concerning the Appalachian National Scenic Trail Fire Management Plan can be obtained from:

Robert W. Gray
Chief Park Ranger
Appalachian National Scenic Trail
Harpers Ferry Center
Harpers Ferry, WV 25425

Written comments will be accepted until January 20, 2005, 30 days after the publication of the environmental assessment Notice of Availability in several local newspapers, which will be on or about December 20, 2004. Please include the following information when submitting comments:

1. Name, address, and (if possible) telephone number;
2. Title of the document on which the comments are being submitted; and,
3. Specific facts of comments, along with the supporting reasons, that the National Park Service should consider in reaching a final decision.

Comments received in response to this solicitation, including names and addresses, will be part of the public record and available for public inspection.

Comments on this environmental assessment can be provided by e-mail (robert_gray@nps.gov), by phone: (304) 535-6171, by fax: (304) 535-6270, or by mail to Robert W. Gray, Chief Park Ranger, Appalachian National Scenic Trail, Harpers Ferry Center, Harpers Ferry, WV 25425

Sincerely,

Robert W. Gray
Chief Park Ranger

Enclosure

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Chapter 1 - Purpose and Need

1.1 INTRODUCTION

This Environmental Assessment (EA) documents the results of a study of the potential environmental impacts of actions proposed in the Appalachian National Scenic Trail fire management plan.

This EA has been prepared in compliance with:

- The National Environmental Policy Act (NEPA) of 1969 (42 United States Code (USC) 4321 et seq.), which requires an environmental analysis for major Federal Actions having the potential to impact the quality of the environment;
- Council of Environmental Quality Regulations at 40 Code of Federal Regulations (CFR) 1500-1508, which implement the requirements of NEPA;
- National Park Service Conservation Planning, Environmental Impact Analysis, and Decision Making; Director's Order (DO) #12 and Handbook.

The Purpose of an Environmental Assessment (EA)

There are three primary purposes of an EA:

- To help determine whether the impact of a proposed action or alternative could be significant, thus indicating that an environmental impact statement (EIS) is needed;
- To aid in compliance with NEPA when no EIS is necessary by evaluating a proposal that will have no significant impacts, but that may have measurable adverse impacts; and
- To facilitate preparation of an EIS if one is necessary.

Key goals of NEPA are to help Federal agency officials make well-informed decisions about agency actions and to provide a role for the general public in the decision-making process. The study and documentation mechanisms associated with NEPA seek to provide decision-makers with sound knowledge of the comparative environmental consequences of the several courses of action available to them. NEPA studies, and the documents recording their results, such as this EA, focus on providing input to the particular decisions faced by the relevant officials. In this case, the Park Manager of Appalachian National Scenic Trail is faced with a decision to develop the Trail's fire management plan as described below. This decision will be made within the overall management framework already established in the Appalachian National Scenic Trail 2000 Strategic Plan and consistent with 2001 federal wildland fire management policy and guidelines. The alternative courses of action to be considered at this time are, unless otherwise noted, crafted to be consistent with the concepts established in the Strategic Plan and the 2001 federal wildland fire management policy and guidelines.

In making decisions about National Park Service administered resources, the Park Service is guided by the requirements of the 1916 Organic Act and other laws, such as the Clean Air Act, Clean Water Act, and Endangered Species Act. The authority for the conservation and management of the National Park Service is clearly stated in the Organic Act, which states the

agency's purpose: "...to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." This authority was further clarified in the National Parks and Recreation Act of 1978: "Congress declares that...these areas, though distinct in character, are united...into one national park system.... The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress."

The Appalachian National Scenic Trail was established as part of the National Trails System Act (Public Law 90-543, October 2, 1968, 16 USC 27 §1244.) Coordination of management and maintenance of the Trail is the responsibility of the Appalachian Trail Park Office (ATPO). Language specific to the Trail's establishment follows:

> "The Appalachian National Scenic Trail, a trail of approximately two thousand miles extending generally along the Appalachian Mountains from Mount Katahdin, Maine, to Springer Mountain, Georgia. Insofar as practicable, the right-of-way for such trail shall comprise the Trail depicted on the maps identified as "Nationwide System of Trails, Proposed Appalachian Trail, NST-AT-101-May 1967", which shall be on file and available for public inspection in the office of the Director of the National Park Service. Where practicable, such rights-of-way shall include lands protected for it under agreements in effect as of October 2, 1968, to which Federal agencies and States were parties. The Appalachian Trail shall be administered *primarily as a footpath* by the Secretary of the Interior, in consultation with the Secretary of Agriculture." (emphasis added).

The initial route of the A.T. was constructed almost entirely by volunteers between 1923 and 1937, building upon the concepts of Benton MacKaye, a forward thinking landscape architect and conservationist. Since that time, volunteers affiliated with the Appalachian Trail Conference (ATC) and its 31 member trail clubs have planned, constructed, reconstructed, and maintained the footpath, as well as a system of more than 250 shelters and associated facilities.

In 1968 Congress recognized that, "Although member clubs of the conference have shouldered responsibility for many miles of the Trail, and at times have been forced to relocate segments away from the path of developments, the demands of an expanding population have multiplied in number and complexity in recent years and long stretches of the Trail are seriously threatened with incompatible encroachments. These are the problems that the conference has insufficient means to combat. If the Trail is to survive, it is apparent that public agencies must assume a larger share of the burden of protection (1968, Senate Report)". Today, with over 270,000 acres acquired by the NPS and the USFS as part of a permanent right-of-way and protected corridor, the Appalachian National Scenic Trail ranks both as a component of the national trails system and a unit of the national park system. Its remarkable decentralized, volunteer-based cooperative management system further sets it apart as a premiere example of a partnership program

involving all levels of government and private citizenry engaged in the cooperative management of a nationally significant public resource.

The requirements placed on the National Park Service by these laws, especially the Organic Act mandate that resources are passed on to future generations "unimpaired" (DOI, 2001). This EA addresses whether the actions of the various alternatives proposed by Appalachian National Scenic Trail impair resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the Trail, (2) key to the natural or cultural integrity of the Trail or opportunities for enjoyment of the Trail, and (3) identified as a goal in the Trail's general management plan or other Park Service planning documents (see *Chapter 3 – Environmental Consequences*).

1.2 PURPOSE AND NEED

According to fire ecologist Dr. Cecil Frost (1998), "… fire once played a role in shaping all but the wettest, the most arid, or the most fire-sheltered plant communities of the United States." There are no indications in the historic record as to the extent or frequency of fire activity (either natural or prescribed) in the Appalachian National Scenic Trail area. The natural fire regime that existed prior to settlement ranges from 0 to 200+ years in the northern portions of the Trail to 0 to 35 years from Pennsylvania south to Georgia (see figure 1-1). Since the inception of the Trail, wildland fires within Appalachian National Scenic Trail boundaries have been suppressed. A natural fire regime no longer exists along the Trail.

National Park Service Wildland Fire Management Guidelines (DO-18) states, "All parks with vegetation that can sustain fire must have a fire management plan." The purpose of this federal action is to develop a fire management plan and program that utilizes the benefits of fire to achieve desired natural and cultural resource conditions while minimizing the fire danger to park resources and adjacent lands from hazardous fuel accumulations. There is a need to manage native plant communities and restore and protect the historic landscape while at the same time protect visitors, facilities, and resources on and adjacent to the Trail.

1.3 BACKGROUND

The Appalachian National Scenic Trail is a 2,167-mile footpath along the ridge crests and across the major valleys of the Appalachian Mountains from Mount Katahdin in Maine to Springer Mountain in north Georgia. The Trail traverses Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, West Virginia, Virginia, Tennessee, North Carolina and Georgia. The Appalachian Trail is used by day, weekend and other short-term hikers, section hikers and thru-hikers. Thru-hikers hike the entire length of the Trail in one season.

The Appalachian Trail began as a vision of forester Benton MacKaye, and was developed by volunteers and opened as a continuous trail in 1937. It was designated as the first National Scenic Trail by the National Trails System Act of 1968. The Trail and Trail corridor, which is the land on either of the Trail footpath totally approximately 1,000 feet, is currently protected

along more than 99 percent of its course by federal or state ownership of the land or by rights-of-way.

The states in which there are Appalachian Trail Park Office (ATPO) managed Trail lands include Maine, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, West Virginia, and Virginia. The United States Forest Service (USFS) manages Appalachian National Scenic Trail lands in New Hampshire, Vermont, Virginia, Tennessee, North Carolina, and Georgia. This Environmental Assessment does not address those USFS lands, or those other NPS properties not managed by the ATPO.

Because of the north-south orientation of the Trail, the fire season is expected to be longer in the south than in the north. The basic fire season consists of two parts, a spring and a fall season. The fall fire season normally lasts from around the first killing frost until snow cover. The spring season begins when snow cover is gone and lasts until the new season vegetation has achieved significant growth.

Since 1968, when the Appalachian National Scenic Trail entered the National Park Service administration, the occurrence of wildland fires on the Trail has been low and all have been suppressed.

1.4 FIRE MANAGEMENT OBJECTIVES

National Park Service Wildland Fire Management Guidelines (DO-18) requires that all parks with vegetation capable of sustaining fire develop a wildland fire management plan that will meet the specific resource management objectives for that park and to ensure that firefighter and public safety are not compromised. This guideline identifies fire as the most aggressive natural resource management tool employed by the National Park Service. The guideline further states that all wildland fires are either classified as wildland fires or prescribed fires. Prescribed fires and wildland fire use may be authorized by an approved wildland fire management plan and contribute to a park's resource management objectives. Human-caused wildland fires are unplanned events and may not be used to achieve resource management objectives by a park. At Appalachian National Scenic Trail, human-caused wildland fires will not be used to achieve resource management objectives. In addition, prescribed fire use is not being considered in this FMP. As knowledge of trail habitats increases there may be some potential for prescribed fire application. If limited use of prescribed fire is necessary prior to revision of this plan, projects will be undertaken on a case by case basis. Each project would follow NPS requirements and would include a site specific Environmental Assessment, Section 7 consultation with USFWS and coordination with the affected State Historic Preservation Officer.

> ***Wildland fires*** are any non-structure fires, other than prescribed fires, that occur in the wildland. This term encompasses fires previously called both wildland fires and prescribed natural fires.
>
> ***Prescribed Fires*** are any fires ignited by management actions in defined areas under predetermined weather and fuel conditions to meet specific objectives.
>
> ***Wildland fire use*** is the management of naturally ignited (*e.g.* lightning) wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in Fire Management Plans.

DO-18 identifies three paramount considerations for each Park's fire management program. They are:

- Protect human life and property both within and adjacent to Park areas;
- Perpetuate, restore, replace, or replicate natural processes to the greatest extent practicable; and
- Protect natural and cultural resources and intrinsic values from unacceptable impacts attributable to fire and fire management activities.

Goals of the Strategic Plan Related to Fire Management:

- Four basic goals are established in the Trail Strategic Plan (April, 2000).
  - Preserve Park Resources;
  - Provide for the Public Use and Enjoyment and Visitor Experience of Parks;
  - Strengthen and Preserve Natural and Cultural Resources and Enhance Recreational Opportunities Managed by Partners;
  - Ensure Organizational Effectiveness.

Objectives of the Strategic Plan Related to Fire Management:

- Increase the number of monitored sites containing native species of special concern;
- Complete natural resource inventories to provide information that could be used to implement appropriate management response to wildland fires;
- Complete cultural resource inventories to provide information that could be used to implement appropriate management response to wildland fire;
- Assist organizations or agencies in implementation of management actions to protect federally threatened and endangered species within the Trail corridor;
- Protect employees, public and park resources.
- To encourage the proliferation of native plants and historic densities of those plants.

The overall goals and objectives of the Appalachian National Scenic Trail fire management plan are the following:

Fire Management goals include:

- Firefighter safety is the highest priority of every fire management activity;
- Protect life, private and public property, and park resources from the effects of unwanted fire;
- Prevent adverse impacts to ecological or cultural resources from fire suppression activities;

Fire Management objectives include:

- Educate employees and the public about the scope and effect of wildland fire management, resource protection, wildland fire prevention, hazard/risk assessment, mitigation and rehabilitation;
- Maintain the highest standards of professional and technical expertise in planning and safely implementing an effective wildland fire management program;
- Manage wildland fire incidents in accordance with accepted interagency standards, using appropriate management strategies and tactics and maximize efficiencies realized through interagency coordination and cooperation;
- Identify wildland-urban interface areas that adjoin NPS managed Trail lands.

1.5 SCOPING ISSUES AND IMPACT TOPICS

Appalachian National Scenic Trail invited public comments by scheduled appointments between the dates of December 5th to December 28th, 2003, as a means of describing and soliciting comments on the proposed actions of the fire management plan. A scoping letter was also sent out to local, state or federal agencies describing the proposed action and means for providing comment. In addition, on November 10, 2003, the Trail published legal notices in over 80 newspapers trailwide, inviting public comments. Three comments concerning the fire management plan were received. One comment was received from a private citizen/volunteer firefighter in Pennsylvania who expressed an interest in entering into a wildland fire cooperative agreement with the Trail. Another comment was from a U.S. Fish and Wildlife Service employee who recommended that the FMP/EA address Canada Lynx habitat protection along with other federally listed and federal species of concern. The last comment was from a state wildland fire employee who expressed operational concerns with wildland fires like trail closures during periods of severe fire weather. A list of persons who received the scoping notice is in Section 4.3.

1.5.1 *Impact Topics Considered in this EA*

Impact topics are derived from issues raised during internal and external scoping. Not every conceivable impact of a proposed action is substantive enough to warrant analysis. The following topics, however, do merit consideration in this EA:

Soils: Low and moderate-severity fires can benefit soils through a fertilization effect, while high-intensity fires can damage soils. In addition, suppression activities such as the building of firelines can cause localized soil damage; therefore, impacts to soils are analyzed in this EA.

Water Resources (including wetlands and floodplains): NPS policies require protection of water resources consistent with the Federal Clean Water Act. Hundreds of small stream and rivers along with many wetlands are found within the boundaries of the Appalachian National

Scenic Trail. Fire suppression efforts can adversely impact these water resources (sediment delivery, turbidity); therefore, impacts to water resources are analyzed in this EA.

Vegetation: Vegetation along the Trail ranges from boreal forest, in the northern portions, to mixed hardwoods to bottomland hardwoods to pine forests as you go south. Wildland fires and wildland fire suppression can have impacts on vegetation and vegetative communities, therefore, impacts to vegetation are analyzed in this EA.

Wildlife: There are resident populations of various species of reptiles, amphibians, birds, mammals, fish, and invertebrates that can be adversely and/or beneficially impacted by suppression tactics. Therefore, impacts to wildlife are evaluated in this EA.

Threatened and Endangered Species: The Federal Endangered Species Act prohibits harm to any species of fauna or flora listed by the U. S. Fish and Wildlife Service (USFWS) as being either threatened or endangered. Such harm includes not only direct injury or mortality, but also disrupting the habitat on which these species depend. While there are no Federally listed threatened or endangered species found on ATPO managed lands, there are several that inhabit or may inhabit areas immediately adjacent to these lands or that may inhabit non-ATPO managed areas within the Trail corridor. Therefore, impacts to T&E species are analyzed in this EA.

Air Quality: The Federal 1970 Clean Air Act stipulates that Federal agencies have an affirmative responsibility to protect a park's air quality from adverse air pollution impacts. All types of fires generate smoke and particulate matter, which can impact air quality on the Trail and the surrounding region. In light of these considerations, air quality impacts are analyzed in this EA.

Visitor Use and Experience: The 1916 NPS Organic Act directs the Service to provide for public enjoyment of the scenery, wildlife and natural and historic resources of national parks "in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations." Fire management activities can result in the temporary closure of certain areas and/or result in visual impacts that might affect the visitor use and experience of the Trail. Therefore, potential impacts of the proposed FMP on visitor use and experience are addressed in this EA.

Park Operations: Severe fires can potentially affect operations at national parks, especially in more developed sites like visitor centers, campgrounds, administrative and maintenance facilities. These impacts can occur directly from the threat to facilities of an approaching fire, and more indirectly from smoke and the diversion of personnel to firefighting. While the Trail has few administrative facilities within the Trail corridor, it does have over 250 overnight shelters and other structures like barns. Fires have caused closures of facilities in parks around the country. Thus, the potential effects of the FMP alternatives on park operations will be considered in this EA.

Cultural Resources: Section 106 of the National Historic Preservation Act of 1966, as amended, provides the framework for Federal review and protection of cultural resources, and

ensures that they are considered during Federal project planning and execution. The Trail has not completed a comprehensive survey. Cultural resources can be affected by fire itself and fire suppression activities. Thus, potential impacts to cultural resources are addressed in this EA.

1.5.2 *Impact Topics Considered but dropped from Further Analysis*

NEPA and the CEQ Regulations direct agencies to "avoid useless bulk…and concentrate effort and attention on important issues" (40 CFR 1502.15). Certain impact topics that are sometimes addressed in NEPA documents on other kinds of proposed actions or projects have been judged to not be substantively affected by any of the FMP alternatives considered in this EA. These topics are listed and briefly described below, and the rationale provided for considering them, but dropping them from further analysis.

Noise: Noise is defined as unwanted sound. Fire suppression efforts can all involve the use of noise-generating mechanical tools and devices with engines, such as chain saws and trucks. Chainsaws, at close range, are quite loud (in excess of 100 decibels). The use of machines in wildland fire suppress is not frequent enough to substantially interfere with human activities in the area or with wildlife behavior. Nor would such infrequent bursts of noise chronically impact the solitude and tranquility associated with the Trail. Therefore, this impact topic is eliminated from further analysis in this EA.

Human Health and Safety: Wildland fires can be extremely hazardous, even life threatening, to humans, and current federal fire management policies emphasize that firefighter and public safety is the first priority; all fire management plans must reflect this commitment (NIFC, 1998). In the event of potentially hazardous wildland fires on any lands administered by the ATPO, local and state agencies would coordinate public notification efforts within and outside the Trail. The extent of public notice would depend on the specific fire situation. In every case, assuring visitor and park staff safety would take priority over other activities.

Since human health and safety are of the highest priority when it comes to fire management, every precaution would be taken during all fire management activities. Neither of the proposed alternatives would constitute a threat to human health and safety, therefore human health and safety are not addressed in this EA.

Waste Management: None of the FMP alternatives would generate noteworthy quantities of either hazardous or solid wastes that need to be disposed of in hazardous waste or general sanitary landfills. Therefore, this impact topic is dropped from additional consideration.

Utilities: Generally speaking, some kinds of projects, especially those involving construction, might temporarily impact above and belowground telephone, electrical, natural gas, water, and sewer lines and cables, potentially disrupting service to customers. Other proposed actions might exert a substantial, long-term demand on telephone, electrical, natural gas, water, and sewage infrastructure, sources, and service, thereby compromising existing service levels or causing a need for new facilities to be constructed. None of the FMP alternatives would cause any of these effects to any extent, and therefore utilities are eliminated from any additional analysis.

Land Use: Visitor and administrative facilities occur within the Trail corridor. Fire management activities would not affect land uses within the Trail Cooridor or in areas adjacent to it; therefore, land use is not included for further analysis in this EA.

Socio-economics: NEPA requires an analysis of impacts to the "human environment" which includes economic, social and demographic elements in the affected area. Fire management activities might bring a short-term need for additional personnel per location along the Trail, but this addition would be minimal and would not affect the neighboring community's overall population, income and employment base. Therefore, this impact topic is not included for further analysis in this EA.

Transportation: None of the FMP alternatives would substantively affect road, railroad, water-based, or aerial transportation in and around the Trail. One exception to this general rule would be the temporary closure of nearby roads during fire suppression activities or from smoke emanating from wildland fires or prescribed fires. Over the long term, such closures would not significantly impinge local traffic since they would be both very infrequent, and, in the case of prescribed fire, of short duration (on the magnitude of 1-2 hours). Therefore, this topic is dismissed from any further analysis.

Environmental Justice / Protection of Children: Presidential Executive Order 12898 requires Federal agencies to identify and address disproportionate impacts of their programs, policies and activities on minority and low-income populations. Executive Order 13045 requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children. None of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations as defined in the Environmental Protection Agency's Environmental Justice Guidance; therefore, these topics are not further addressed in this EA.

Indian Trust Resources: Indian trust assets are owned by Native Americans but held in trust by the United States. Indian trust assets do not occur within Appalachian National Scenic Trail and, therefore, are not evaluated further in this EA.

Prime and Unique Agricultural Lands: Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique land is land other than prime farmland that is used for production of specific high-value food and fiber crops. Fire management activities, however, would not prevent these lands from being farmed under special use permit, and fires on these lands might likely benefit future crops through the fertilization effect of the ash. Therefore, this impact topic is not evaluated further in this EA.

Wilderness: According to National Park Service Management Policies (2001), proposals having the potential to impact wilderness resources must be evaluated in accordance with National Park Service procedures for implementing the National Environmental Policy Act. While there are proposed or designated wilderness areas within or adjacent to the Trail, there are none within the

area managed by the Appalachian Trail Park Office. Wilderness impacts are not further evaluated in the EA.

Resource Conservation, Including Energy, and Pollution Prevention: The National Park Service's *Guiding Principles of Sustainable Design* provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook articulates principles to be used such as resource conservation and recycling. Proposed project actions would not minimize or add to resource conservation or pollution prevention on the Trail and, therefore, this impact topic is not evaluated further in this EA.

Table 1-1 Impact Topics for Appalachian National Scenic Trail Fire Management Plan EA

Impact Topic	Retained or Dismissed from Further Evaluation	Relevant Regulations or Policies
Soils	Retained	NPS *Management Policies 2001*
Water Resources	Retained	Clean Water Act; Executive Order 12088; NPS *Management Policies*
Floodplains and Wetlands	Retained	Executive Order 11988; Executive Order 11990; Rivers and Harbors Act; Clean Water Act; NPS *Management Policies*
Vegetation	Retained	NPS *Management Policies*
Wildlife	Retained	NPS *Management Policies*
Threatened and Endangered Species and their Habitats	Retained	Endangered Species Act; NPS *Management Policies*
Air Quality	Retained	Federal Clean Air Act (CAA); CAA Amendments of 1990; NPS *Management Policies*
Visitor Use and Experience	Retained	NPS *Management Policies*
Park Operations	Retained	NPS *Management Policies*
Cultural Resources	Retained	Section 106; National Historic Preservation Act; 36 CFR 800; NEPA; Executive Order 13007; Director's Order #28; NPS *Management Policies*
Noise	Dismissed	NPS *Management Policies*
Waste Management	Dismissed	NPS *Management Policies*
Human Health & Safety	Dismissed	NPS *Management Policies*
Utilities	Dismissed	NPS *Management Policies*
Land Use	Dismissed	NPS *Management Policies*
Socioeconomics	Dismissed	40 CFR Regulations for Implementing NEPA; NPS *Management Policies*
Transportation	Dismissed	NPS *Management Policies*
Environmental Justice	Dismissed	Executive Order 12898
Indian Trust Resources	Dismissed	Department of the Interior Secretarial Orders No. 3206 and No. 3175
Prime and Unique Agricultural Lands	Dismissed	Council on Environmental Quality 1980 memorandum on prime and unique farmlands
Wilderness	Dismissed	The Wilderness Act; Director's Order #41; NPS *Management Policies*
Resource Conservation, Including Energy, and Pollution Prevention	Dismissed	NEPA; NPS *Guiding Principles of Sustainable Design*; NPS *Management Policies*

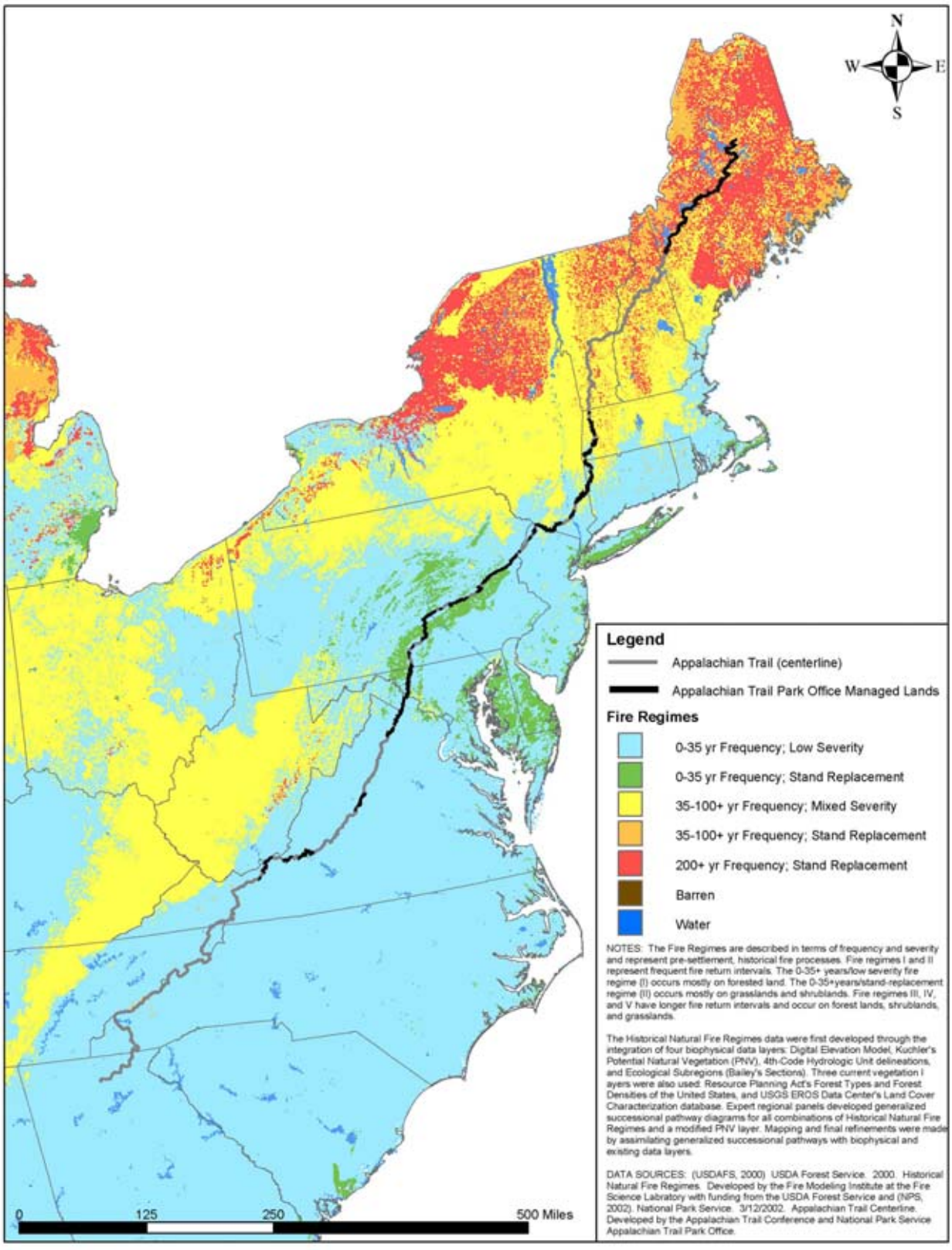

Figure 1-1 Appalachian National Scenic Trail Vicinity

Chapter 2 - Issues and Alternatives

This Chapter describes the range of alternatives, including the Proposed Action and "No Action" Alternatives, formulated to address the purpose of and need for the proposed project. These alternatives were developed through evaluation of the comments provided by individuals, organizations, governmental agencies, and the Interdisciplinary Team (IDT).

2.1 ALTERNATIVES CONSIDERED BUT NOT ANALYZED FURTHER IN THIS EA

2.1.1 F*ire Management Plan to include Wildland Fire Use*

Wildland fire use involves the management of fires ignited by either human or natural means (usually lightning) that are permitted to burn under specific environmental conditions for natural resource benefits. In many cases, national parks and other federal wildland fire agencies employ wildland fire use as a part of their fire management program to obtain natural resource benefits from wildland fire. These lands typically have large acreages and the areas identified for its use contain few if any private residences and structures nearby (wildland urban interface). In such cases, wildland fire use is a critical component in meeting fire management objectives of federal agencies. Due to the linear nature of the Trail there will be no Wildland Fire Use planned on the Trail corridor. While the Trail traverses nearly 2,200 miles and covers over 270,000 acres, the width of the Trail is usually too narrow to ensure fire containment with the Trail's boundaries. In addition, staffing limitations, and the close proximity of urban development to the trial prohibit the use of wildland fire. Park staff concluded that the potential risks to human health and safety and natural/cultural resources under this alternative outweigh any potential resource benefits that would be obtained from including wildland fire use into the fire management plan.

2.1.2 *Fire Management Plan to include Prescribed Fire Use along with Non-fire Hazard Fuel Reduction Treatments*

At present, prescribed fire use is not being considered nor are any non-fire hazard fuel reduction treatments being proposed within the boundaries of the Appalachian National Scenic Trail. As knowledge of trail habitats increases there might be some potential for future prescribed fire or non-fire treatment application. If limited use of prescribed fire or Wildland Urban Interface (WUI) projects are determined to be necessary prior to revision of this plan, projects will be undertaken on a case-by-case basis. Each project would follow NPS requirements and would include a site specific Environmental Assessment, Section 7 consultation with USFWS and coordination with the affected State Historic Preservation Officer.

2.2 ALTERNATIVES CONSIDERED AND ANALYZED IN THIS EA

The Appalachian National Scenic Trail extends from Northern Georgia to Northern Maine. A large part of the Trail at the southern end is located on federal lands, primarily U.S. Forest Service and National Park Service units. From northern Virginia northward, the Trail crosses

much different ownership: private lands, state park and forestlands, additional federal lands, and lands administered by ATPO. The alternatives described below will only be considered on those lands administered by the ATPO, which will be the only lands analyzed in this assessment (see Figure 1-1). For the reasons described in Section 2.1, wildland fire suppression is the only action that will be considered for the following two Alternatives. Due to limited range of possible fire management activities being considered by the ATPO staff, only two alternatives are being considered for this EA.

2.2.1 *Alternative 1 (No Action Alternative) – No Fire Management Plan, Wildland Fire Suppression Conducted by State Wildland Fire Protection Agencies and Local Fire Departments*

Under this alternative, NPS would continue to manage the Trail without the guidance of a FMP. Current wildland fire management is guided by the 2000 Strategic Plan. The basic direction of the plan is the preservation of natural and cultural resources, provide for public use and enjoyment, strengthen management opportunities by partners and ensure organizational effectiveness.

The direction provided by the ATPO Strategic Plan indicates that prompt, aggressive suppression actions, would be the normal response to wildland fires on the Trail. Wildland fire suppression would continue to be conducted by local area fire departments and state wildland fire agencies under state guidelines, and without NPS input and agreements from ATPO. All wildland fires suppressed on ATPO lands are to be reported immediately to the ATPO headquarters in Harpers Ferry, West Virginia, in order to assess any damage to the Trail's resources. However, many times local fire departments are not aware that they are fighting wildland fire on ATPO lands, which might result in the local fire department not informing the ATPO office of a wildland fire event. This could result in damage to ecological or cultural resources along the Trail because mitigation measures might not be employed in a timely manner to correct those damages.

Over 300 local fire departments are estimated to be responsible for wildland fire suppression along the Appalachian Trail. These fire departments may or may not have prior agreements with their state foresters and associated federal agencies (e.g. NPS and U.S. Forest Service) that dictate proper suppression techniques and mitigation measures that minimize negative impacts to environmental and cultural resources.

2.2.2 Alternative 2 (NPS Preferred Alternative) – *Fire Management Plan to Include Suppression of Wildland Fires with Local and State Agreements*

Under this Alternative, the Appalachian National Scenic Trail would be divided into three fire management units (FMUs) to facilitate the achievement of its fire management objectives. Because the Trail stretches over 2,000 miles and covers over 270,000 acres in fourteen states, the following FMUs have been designated by political boundaries and include:

Fire Management Unit (FMU)

Any land management area definable by objectives, topographic features, access, values-to-be-protected, political boundaries, fuel types, or major fire regimes, etc., that sets it apart from management characteristics of an adjacent unit. FMUs are delineated in Fire Management Plans (FMP). These units may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives (NPS, 1999).

- Federal Lands other than Appalachian Trail Park Office-administered lands FMU
- State Lands FMU
- Appalachian Trail Park Office-administered Lands FMU

Federally owned lands administered by other offices, including lands in other parks units, National Forest lands, and lands administered by the Smithsonian Institute, the Tennessee Valley Authority, and the U.S. Fish and Wildlife Service, are expected to address fire suppression needs along the Trail corridor by the responsible land-managing agency in their appropriate unit FMP, and fire management of these lands will not be considered further in this assessment. Where the Trail passes through other federal ownership, the hosting agency's planning policies and procedures would be used to address suppression needs. Only the FMU consisting of lands acquired and managed by ATPO is considered further.

Fire management objectives outlined under this alternative include:

- Contain 95% of unwanted wildland fires at less than 5 acres. Contain the remaining 5% within the Trail corridor at less than 100 acres.
- Attempt to monitor wildland fire behavior and wildland fire effects based upon available staffing and resources in order to provide information for future evaluation and program direction.
- Identify and assess wildland fire risks to wildland-urban interface areas adjacent to ATPO managed lands along 100 miles of trail annually.

All wildland fires along the Trail corridor, human-caused fires and naturally ignited fires (*e.g.* lightning), would be declared wildland fires and suppressed in a manner that minimizes negative environmental and cultural impacts of suppression activities. Under this alternative wildland fire suppression would be conducted with an approved fire management plan with cooperative agreements developed between the NPS and state wildland fire management agencies in order to ensure firefighter safety, protect life, private and public property, and park natural and cultural resources from the effects of unwanted fire, and to prevent adverse impacts from fire suppression activities. In addition, areas of Wildland Urban Interface would be identified over the life of the plan.

All wildland fire suppression activities would adhere to Minimum Impact Suppression Tactics (MIST) guidelines as outlined in Section 2.3 *Mitigation Measures and Monitoring* through communications of these standards in the cooperative agreements developed with the state wildland fire agencies.

2.2.3 *Environmentally Preferred Alternative*

The National Park Service is required to identify the environmentally preferred alternative(s) for any of its proposed projects. That alternative is the alternative that will promote the national environmental policy expressed in NEPA (Section 101 (b)). This includes alternatives that:

1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

2) Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

3) Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;

4) Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;

5) Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and

6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In essence, the environmentally preferred alternative would be the one(s) that "causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (CEQ, 1978).

In this case, Alternative 2 is the environmentally preferred alternative for the Appalachian National Scenic Trail since it best meets goals 1, 2, 3, and 4 described above. Under this alternative, fire management activities helps protect park resources and adjacent lands from the threat of wildland fires and from damage caused by wildland fire suppression. Finally, this alternative best protects and helps preserve the historic, cultural, and natural resources in the Trail for current and future generations.

2.3 MITIGATION MEASURES AND MONITORING

A program to monitor fire effects is not currently in place. Only wildland fire effects could be monitored and the scattered nature of both fire occurrence and landownership does not allow for cost effective monitoring implementation. Should the location of a wildland fire become known to ATPO staff, an attempt to mark the location and establish a photopoint would be made, time and staff limitations considered. Should monitoring become necessary these procedures described in the National Park Service Fire Monitoring Handbook (NPS, 2001) would be followed.

Mitigation measures are prescribed to prevent and/or mitigate adverse environmental impacts that might occur from fire management activities.

2.3.1 *Fire Management Activities*

- All suppression guidelines would follow Minimum Impact Suppression Tactics (MIST) guidelines. These include:
  - Keep fire engines or slip-on units on existing roads;
  - Restrict the use of heavy equipment such as bulldozers or plows for constructing firelines. A tractor with box blade or disc would be used for fire line construction only in extreme situations when high value resources are at risk, and then only with the authorization of the Park Manager or designee;
  - Prohibit the use of fire line explosives;
  - Use existing natural fuel breaks and human-made barriers, wet line, or cold trailing the fire edge in lieu of handline construction whenever possible;
  - Keep fire line widths as narrow as possible when they must be constructed;
  - Avoid ground disturbance within known natural and archeological/cultural/historic resource locations. When fire line construction is not discretionary and deemed necessary to protect human life or property in proximity to these resource locations, it would involve as little ground disturbance as possible and be located as far outside of resource boundaries as possible;
  - Use water instead of fire retardant. If retardant must be used, use a non-fugitive type, and avoid surface water resources;
  - Use soaker hose, sprinklers or foggers in mop-up; avoid boring and hydraulic action;
  - Minimize the cutting of trees;
  - Scatter or remove debris as prescribed by the incident commander;
  - Protect air and water quality by complying with the Clean Air Act, the Clean Water Act, and all other applicable federal, state, and local laws and requirements.

- Where handline construction takes place on slopes exceeding 10%, erosion control methods would be used.

- All sites where improvements are made or obstructions removed would be rehabilitated to pre-fire conditions, to the extent practicable.

2.3.2 *Air and Water Resources (Including wetlands and floodplains)*

- The suppression response selected to manage a wildland fire would consider air quality standards. Stream crossings would be limited to set and existing locations;

- Fire retardant and foam suppression use would not be permitted within 100 feet of surface water resources;

- During fire suppression, water would be used in lieu of fire retardant whenever possible. If retardant must be used, a non-fugitive type would be chosen, and bodies of water avoided;

- Following fire suppression activities, firelines would be re-contoured, water barred, and possibly seeded (with native plant species)

2.3.3 *Visitor Experience and Use*

- Park neighbors, visitors and local residents would be notified of any fire management events that have the potential to impact them.

- Trail users would be made aware of wildland fires through the Appalachian Trail Conference website, postings at access entry points and local media outlets;

- Trail segments might be closed to visitor use.

2.3.4 *Human Health and Safety*

- Only NPS employees who are fully qualified (i.e. meeting NPS wildland fire qualifications and accepted interagency knowledge, skills and abilities for the assigned fire job) would be assigned fire management duties (unless assigned as trainees, in which case they would be closely supervised by an individual fully qualified for the given position).

- Cooperators would meet applicable state and/or local requirements for wildland fire suppression qualifications.

- No NPS lead fire management operation would be initiated until all NPS personnel involved have received a safety briefing describing known hazards and mitigating actions (LCES), current fire season conditions, and current and predicted fire weather and behavior. Hazards specific to the Trail include:
  - Slope reversal.
  - Rolling burning materials.
  - Snags and dead trees with weak root systems.
  - Steep/sheer cliffs.
  - Stinging/biting insects and poisonous snakes.
  - Dehydration, heat exhaustion and heat stroke.
  - Possible presence of unexploded ordnance in wooded areas, the visibility of which is obscured by timber understory and leaf litter.

- Wildland fire incident commanders would minimize firefighter exposure to heavy smoke by incorporating the recommendations outlined in the publication *Health Hazards of Smoke* (Sharkey 1997), available from the Missoula Technology and Development Center.

- Park neighbors, visitors and local residents would be notified of any fire management events that have the potential to impact them.

- Smoke on roadways would be monitored and traffic control provisions taken to ensure motorist safety during fire events on the Trail corridor. The following procedures would be taken to compensate for reduced visibility when a paved road is affected by smoke (the incident commander on a particular event would determine visibility levels and might request assistance from local law enforcement and highway departments):

    - Posting of "Smoke on Road" signs on either side of the affected area.
    - Reducing the posted speed limit when visibility is strongly reduced and escorting vehicles with a well-marked law enforcement vehicle as necessary.
    - Closing the road to traffic when visibility is severely reduced.

- The Park Manager or designee might, as a safety precaution, temporarily close all or part of the Trail to the visiting public.

- Safety briefings would be conducted for fire personnel prior to any participation in wildland suppression.

- All fire personnel would be reminded of the "18 Situations That Shout Watch Out" and would be expected to comply with the "10 Standard Fire Orders".

2.3.5 Property

- To the greatest extent feasible and appropriate, park infrastructure, any other development, and adjacent non-agency land (with numerous structures) would be protected during all fire management activities.

2.3.6 *Cultural Resources*

- When firelines must be constructed techniques requiring the least disturbance (i.e. leaf blown lines, mowed lines) are preferred. In rare circumstances when less disturbing techniques cannot be used, the use of bulldozers or heavy equipment in suppression might be authorized by the Park Manager or designee. Engines and other vehicles would be restricted from areas identified as potentially affected by vehicle traffic where rutting, soil compaction or other habitat damage could occur if at all possible;

- Handlines would be constructed only in areas where damage to known archeological and/or historic resources is not likely to occur.

- During all suppression activities, the minimum impact suppression tactics policy would be incorporated to the greatest extent feasible and appropriate for the given situation. (Tactic guidelines directly or indirectly facilitating the protection of archeological/cultural/historic resources are listed in section 2.3.1).

2.4 IMPACT DEFINITIONS

Table 2-1 depicts the impact definitions used in this Environmental Assessment. Significant impact thresholds for the various key resources were determined in light of compliance with existing state and federal laws, and compliance with existing Appalachian National Scenic Trail planning documents.

Table 2-1 Impact Definitions

Key Resources	"Minor" Impact	"Moderate" Impact	"Major" Impact	Duration
Soils	The effects to soils would be detectable, but likely short-term. Damage to or loss of the litter/humus layers that causes slight localized increases in soil loss from erosion; effects to soil productivity or fertility would be small, as would the area affected; short-term and localized compaction of soils that does not prohibit re-vegetation; if mitigation were needed to offset adverse effects, it would be relatively simple to implement and likely successful	The effect on soil productivity or fertility would be readily apparent, long term, and result in a change to the soil character over a relatively wide area; fire severe enough to cause a noticeable change in soil community; intermittent areas of surface sterilization of soils that might cause some long term loss of soil productivity that might alter a portion of the vegetation community; short-to long-term and localized compaction of soils that might prohibit some re-vegetation; mitigation measures would probably be necessary to offset adverse effects and would likely be successful	The effect on soil productivity or fertility would be readily apparent, long-term, and substantially change the character of the soils over a large area in and out of the Trail corridor. Damage to or loss of the litter/humus layers that would increase soil loss from erosion on a substantial portion of the burn area; fire severe enough to cause substantial damage to the soil community; substantial surface sterilization of soils that might cause long term loss of soil productivity and that might alter or destroy the vegetation community over most of the burned area; long-term and widespread soil compaction that affects a large number of acres and prohibits re-vegetation; mitigation measures to offset adverse effects would be needed, extensive, and their success could not be guaranteed	**Short-Term** Recovers in less than 3 years **Long-Term** Takes more than 3 years to recover
Water Resources (Including Wetlands and Floodplains)	Changes in water quality would be measurable, although small, likely short-term, and localized; localized and indirect riparian impacts that do not substantively increase stream temperatures or affect stream habitats; no alteration of natural hydrology of wetlands; A U.S. Army Corps of Engineers 404 permit would not be required; no filling or disconnecting of the floodplain; short-term impacts that do not affect the functionality of the floodplain; no mitigation measure associated with water quality would be necessary	Changes in water quality would be measurable and long-term but would be relatively local; localized and indirect riparian impacts that might slightly increase stream temperatures or affect stream habitats; alteration of natural hydrology of wetlands would be apparent such that an U.S. Army Corps of Engineers 404 permit could be required; alteration of the floodplain apparent; wetland or floodplain functions would not be affected in the long-term; mitigation measures associated with water quality or hydrology would be necessary and the measures would likely succeed	Changes in water quality would be readily measurable, would have substantial consequences, and would be noticed on a regional scale; localized and indirect riparian impact that might substantively increase stream temperatures or affect stream habitats; effects to wetlands or floodplains would be observable over a relatively large area and would be long-term, and would require a U.S. Army Corps of Engineers 404 permit; filling or disconnecting of the floodplain; long-term impacts that affect the functionality of the floodplain; mitigation measures would be necessary and their success would not be guaranteed	**Short-Term** Recovers in less than 1 year **Long-Term** Takes more than 1 year to recover

Table 2-1 Impact Definitions

Key Resources	"Minor" Impact	"Moderate" Impact	"Major" Impact	Duration
Vegetation	Temporarily affect some individual native plants and would also affect a relatively small portion of that species' population; short-term changes in plant species composition and/or structure, consistent with expected successional pathways of a given plant community from a natural disturbance event; increase in invasive species in limited locations; occasional death of individual canopy trees; mitigation to offset adverse effects, including special measures to avoid affecting species of special concern, could be required and would be effective	The effect on some individual native plants along with a sizeable segment of the species' population in the long-term and over a relatively large area; long-term changes in plant species composition and/or structure, consistent with expected successional pathways of a given plant community from a natural disturbance event; widespread increase in invasive species that does not jeopardize native plant communities; death of numerous canopy trees; mitigation to offset adverse effects could be extensive, but would likely be successful; some species of special concern could also be affected	Considerable long-term effect on native plant populations, including species of special concern, and affect a relatively large area in and out of the Trail corridor; violation of the Endangered Species Act of 1973; widespread increase in invasive species that jeopardizes native plant communities; mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed	**Short-Term** Recovers in less than 3 years **Long-Term** Takes more than 3 years to recover
Wildlife	Temporary displacement of a few localized individuals or groups of animals; mortality of individuals of species not afforded special protection by state and/or federal law; mortality of individuals that would not impact population trends; mitigation measures, if needed to offset adverse effects, would be simple and successful	Effects to wildlife would be readily detectable, long-term and localized, with consequences affecting the population level(s) of specie(s); mitigation measures, if needed to offset adverse effects, would be extensive and likely successful	Effects to wildlife would be obvious, long-term, and would have substantial consequences to wildlife populations in the region; violation of the Endangered Species Act of 1973; mortality of a number of individuals that subsequently jeopardizes the viability of the resident population; extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed	**Short-Term** Recovers in less than 1 year **Long-Term** Takes more than 1 year to recover
Air Quality	Changes in air quality would be measurable, although the changes would be small, short-term, and the effects would be localized; temporary and limited smoke exposure to sensitive resources; no air quality mitigation measures would be necessary	Changes in air quality would be measurable, would have consequences, although the effect would be relatively local; all air quality standards still met; short-term exposure to sensitive resources; air quality mitigation measures would be necessary and the measures would likely be successful	Changes in air quality would be measurable, would have substantial consequences, and be noticed regionally; violation of state and federal air quality standards; violation of Class II air quality standards; prolonged smoke exposure to sensitive receptors; air quality mitigation measures would be necessary and the success of the measures could not be guaranteed	**Short-Term** Recovers in 7 days or less **Long-Term** Takes more than 7 days to recover

Table 2-1 Impact Definitions

Key Resources	"Minor" Impact	"Moderate" Impact	"Major" Impact	Duration
Visitor Use & Experience	Temporary displacement of recreationists or closure of trails, and recreation areas during off-peak recreation use; temporary or short-term alteration of the vista, or temporary presence of equipment in localized area; smoke accumulation during off-peak recreation use. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.	Changes in visitor use and/or experience would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.	Permanent closure of trails and recreation areas; conflict with peak recreation use; long-term change in scenic integrity of the vista; substantive smoke accumulation during peak recreation use. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.	**Short-Term** Occurs only during the treatment effect **Long-Term** Occurs after the treatment effect
Park Operations	The effects would be detectable and likely short-term, but would be of a magnitude that would not have an appreciable effect on park operations; short-term suspension of non-critical park operations; negligible impact to park buildings and structures; if mitigation were needed to offset adverse effects, it would be relatively simple and likely successful	The effects would be readily apparent, be long-term, and would result in a substantial change in park operations in a manner noticeable to staff and the public; long-term suspension of all park operations (1 to 2 days); detectable adverse impacts to park buildings and structures; mitigation measures would probably be necessary to offset adverse effects and would likely be successful	The effects would be readily apparent, long-term, would result in a substantial change in park operations in a manner noticeable to staff and the public and be markedly different from existing operations; prolonged suspension of all park operations; substantial adverse impacts to park buildings and structures; mitigation measures to offset adverse effects would be needed, would be extensive, and their success could not be guaranteed	**Short-Term** Effects lasting for the duration of the treatment action **Long-Term** Effects lasting longer than the duration of the treatment action.
Cultural Resources	For archeological resources, the impact affects an archeological site(s) with modest data potential and no significant ties to a living community's cultural identity; temporary, non-adverse effects to registered cultural resource sites, eligible cultural resource sites, sites with an undetermined eligibility, and traditional cultural properties; no effect to the character defining features of a National Register of Historic Places eligible or listed structure, district, or cultural landscape	For archeological resources, the impact affects an archeological site(s) with high data potential and no significant ties to a living community's cultural identity; temporary adverse effects to registered cultural resource sites, eligible cultural resource sites, sites with an undetermined eligibility, and traditional cultural properties, but would not diminish the integrity of the cultural resource to the extent that its National Register eligibility is jeopardized	For archeological resources, the impact affects an archeological site(s) with exceptional data potential or that has significant ties to a living community's cultural identity; long-term adverse impacts to registered cultural resource sites, eligible cultural resource sites, sites with an undetermined eligibility, and traditional cultural properties that would diminish the integrity of the cultural resource to the extent that its National Register eligibility is jeopardized	**Short-Term** Treatment effects on the natural elements of a cultural landscape (e.g., three to five years until new vegetation returns) **Long-Term** Because most cultural resources are non-renewable, any effects would be long term

2.5 COMPARISON OF ALTERNATIVES

Table 2-2 briefly summarizes the environmental effects of the various alternatives. It provides a quick comparison of how well the alternatives respond to the project need, objectives, important issues and impact topics. Chapter 3 discusses the environmental consequences of the proposed alternatives in detail.

Table 2-2 Comparisons of Alternatives' Responses to Project Need, Objectives, Important Issues, and Impact Topics

	Alternative 1 "No Action" Alternative *No Fire Management Plan, Wildland Fire Suppression Conducted by State Wildland Fire Protection Agencies and Local Fire Departments without Prior Agreements*	**Alternative 2 "NPS Preferred Alternative"** *Fire Management Plan to Include Suppression of Wildland Fires with Local and State Agreements*
Project Need		
Wildland Fire Suppression	Yes	Yes
Impact Topics		
Soils	Very minor and localized soil compaction and disturbance would occur from wildland fire suppression; beneficial impacts from fire not realized.	Very minor and localized soil compaction and disturbance would occur from wildland fire suppression; beneficial impacts from fire not realized.
Water Resources (including wetlands and floodplains)	Possible short-term minor adverse indirect water resources impacts.	Possible short-term minor adverse indirect water resources impacts.
Vegetation	Short-term minor adverse direct impacts to vegetation from wildland fire suppression activities; areas where wildland fire suppression tactics resulted in soil disturbance would have a greater potential for invasive species; beneficial impacts to vegetation from a natural fire regime not realized.	Short-term minor adverse direct impacts to vegetation from wildland fire suppression activities; areas where wildland fire suppression tactics resulted in soil disturbance would have a greater potential for invasive species; beneficial impacts to vegetation from a natural fire regime not realized.

Table 2-2 Comparisons of Alternatives' Responses to Project Need, Objectives, Important Issues, and Impact Topics

	Alternative 1 "No Action" Alternative *No Fire Management Plan, Wildland Fire Suppression Conducted by State Wildland Fire Protection Agencies and Local Fire Departments without Prior Agreements*	**Alternative 2 "NPS Preferred Alternative"** *Fire Management Plan to Include Suppression of Wildland Fires with Local and State Agreements*
Wildlife	Individual mortality of some species possible during suppression activities; minor short-term adverse impacts to habitat due to suppression activities; habitat altered with the removal of a natural fire regime.	Individual mortality of some species possible during suppression activities; minor short-term adverse impacts to habitat due to suppression activities; habitat altered with the removal of a natural fire regime.
Threatened and Endangered Species	No adverse impacts to Threatened and Endangered Species.	No adverse impacts to Threatened and Endangered Species.
Air Quality	Minor and short-term air quality impacts from wildland fires; wildland fire suppression would reduce smoke emission from wildland fires	Minor and short-term air quality impacts from wildland fires; wildland fire suppression would reduce smoke emission from wildland fires
Visitor Use and Experience	Minor and short-term adverse impacts during suppression activities (*e.g.* trail or road closures, presence of work crews in the vista).	Minor and short-term adverse impacts during suppression activities (*e.g.* trail closures or limited access to certain areas, presence of work crews in the vista).
Park Operations	Potential for minor and short-term adverse impacts during suppression activities (*e.g.* closure of some facilities, diversion of park personnel).	Potential for minor and short-term adverse impacts during suppression activities (*e.g.* closure of some facilities, diversion of park personnel).
Cultural Resources	Potential minor adverse impact to known cultural resources; potential for impacts to un-recorded sites.	No adverse impacts to known cultural resources likely; potential for impacts to un-recorded sites

Chapter 3 – Environmental Analysis

This chapter summarizes the existing environmental conditions and the probable environmental consequences (effects) of implementing the action and "No Action" alternatives. Due to the large scope, for the analysis of the "No Action" Alternative, it is assumed that the estimated 300+ local fire departments responsible for wildland fire suppression along the Appalachian Trail have prior agreements with their state foresters and associated federal agencies (e.g. NPS (non-ATPO) and U.S. Forest Service) that dictate proper suppression techniques that minimize negative impacts to environmental and cultural resources. While it is assumed that proper suppression techniques would be used, with no cooperative agreement, local fire departments might be unaware of NPS guidance towards those resources.

This chapter also provides the scientific and analytical basis for comparing the alternatives. The probable environmental effects are quantified where possible; where not possible, qualitative descriptions are provided. Descriptions of the Affected Environments for the various impact topics were taken from ATPO's planning documents, State Natural Heritage surveys, and input from park specialists.

3.1 SOILS

3.1.1 *Affected Environment*

The Trail generally follows the Appalachian Mountain chain. Numerous crossings of major watercourses bring the Trail to much lower elevations. Numerous areas of rock outcrops are found along the mountain crests. Elevations range from 124 ft. above Mean Sea Level (MSL) at Bear Mountain on the Hudson River in New York to 6,625 ft. MSL at Clingman's Dome in Tennessee.

Soils vary widely over the Trail depending on elevation, underlying material and other factors. Most soils on the higher elevations are thin and subject to erosion from use and could be similarly affected by suppression operations. Lowland soils on the other hand are expected to be deeper and more productive but still subject to damage by suppression operations.

3.1.2 *Environmental Consequences*

Soil impacts were qualitatively assessed using professional judgment based on investigations of soil characteristics.

3.1.2.1 Alternative 1 (No Action)

Proposed activities with the potential to adversely impact soils include wildland fire suppression activities including the building of firelines, off-road use of fire suppression vehicles, and excessive water use, and wildland fire exclusion.

Several minor adverse impacts could result from wildland fire suppression activities. Minor and localized soil compaction and/or disturbance would occur if fire suppression vehicles went off-road onto soft ground to combat wildland fire. The digging of firelines, if deemed necessary, would result in minor, localized soil disturbance and could lead to increased erosion, especially in steeply sloped areas within the Trail corridor. Lastly, excessive water used to extinguish fires could result in minor and localized erosion and soil disturbance. In the event of a wildland fire denuding an area of vegetation, soils, especially those located on steeper slopes, would be potentially more vulnerable to erosion.

Overall benefits from a natural fire regime to soil quality would not be fully realized under this alternative. In areas where wildland fire did burn, prior to suppression, nutrients would be released into the soil and the fertilization effects of ash would provide an important source of nutrients for vegetation in the area. In addition to increasing nutrification of the soils, raising pH, and increasing minerals and salt concentrations in the soil, the ash and charcoal residue resulting from incomplete combustion aids in soil buildup and soil enrichment by being added as organic matter to the soil profile. The added material works in combination with dead and dying root systems to make the soil more porous, better able to retain water, and less compact while increasing needed sites and surface areas for essential microorganisms, mycorrhizae, and roots (Vogl, 1979; Wright and Bailey, 1980). However, if a wildland fire was severe enough and burned "hot", in areas of high-burn severity, the organic layer of the soil could be consumed and soil layers could become water repellant.

While it is assumed that proper suppression techniques that minimize adverse impacts to environmental resources would be used by local and state departments, with no cooperative agreement, local fire departments might be unaware of NPS guidance towards mitigations meant to minimize or repair damages to the soil caused by wildland fire or wildland fire suppression activities. This could result in damage to soil resources along the Trail not being corrected.

3.1.2.2 Alternative 2 (NPS Preferred Alternative)

Adverse direct impacts resulting from wildland fire suppression under this alternative would be similar to those described in the "No Action" Alternative. However, under this alternative, mitigations would be established that minimize those impacts. Cooperative agreements with state wildland fire agencies would highlight the need to apply minimum impact suppression tactics (MIST) in all suppression actions on APTO lands. To minimize potential soil impacts from suppression activities, vehicles would be restricted to roads whenever and wherever possible. Existing natural fuel breaks and human-made barriers (e.g. streams, roads), wet line, or cold trailing the fire edge in lieu of fireline construction would be used whenever possible. If building firelines were necessary, they would be located outside of highly erosive areas, steep slopes, and other sensitive areas whenever possible. Following fire suppression activities, firelines would be re-contoured, water barred, and possibly seeded with native plant species. In addition, mitigation measures would be put into place, which would rehabilitate areas impacted by wildland fire itself. For example, steep slopes that were denuded of vegetation would be seeded with native vegetation to minimize erosion.

Conclusion

Both alternatives would have minor, localized, and short-term soil erosion impacts resulting from wildland fire suppression activities. However, those impacts would be lessened in the "NPS Preferred" Alternative due to cooperative agreements with the State and local departments ensuring that mitigation measures aimed at preserving soil quality are put in place.

The implementation of any of the alternatives would not impair geologic and soil resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the Trail, (2) key to the natural or cultural integrity of the Trail or opportunities for enjoyment of the Trail, and (3) identified as a goal in the Trail's general management plan or other Park Service planning documents. Alternative 2, with its added mitigations would be the more beneficial of the two alternatives to the soils of the Appalachian Trail.

3.2 WATER RESOURCES (INCLUDING WETLANDS AND FLOODPLAINS)

3.2.1 *Affected Environment*

The Trail is cut by many large, well-known rivers including the Hudson, Delaware, Susquehanna, and Potomac Rivers. Small streams are frequently found within the corridor. These small streams in particular are subject to damage from suppression operations. Water quality along the Trail corridor varies widely with some streams considered unsafe due to pollution to others considered pristine.

3.2.2 *Environmental Consequences*

Water resource impacts were qualitatively assessed using professional judgment based on investigations of water resources, and literature reviews.

3.2.2.1 Alternative 1 (No Action)

The two principal impacts to water quality resulting from wildland fire suppression stem from: 1) erosion-induced suspended sediments, turbidity, and sedimentation, and 2) toxic effects from fire retardants and foam suppressants. In addition, intense fires might introduce large quantities of organic material (ash) into aquatic systems, blown in by wind or transported by runoff.

Increased soil erosion can result from loss of vegetative cover during a wildland fire as well as from ground crew activities engaged in suppression activities. These could lead to turbidity and sedimentation of surface water resources within the affected areas of the Trail. Turbidity and sedimentation can alter the hydrologic regime of surface waters and adversely impact aquatic habitats, invertebrates and fish. While suppression tactics should be utilized that minimize impacts to water quality (e.g. not permitting fireline construction and fire retardant and foam suppression use within 100 feet of surface water resources), a large, intense fire has a high probability of resulting in short-term, localized, minor adverse indirect impacts on water quality

from erosion, turbidity and sedimentation. There is potential for an increase in turbidity and sediment delivery to tributaries found within the Trail corridor as a result of soil erosion following wildland fires or wildland fire suppression, however, as described under Section 3.1.2.1, the degree of soil erosion would be minor and localized and would not affect the classified uses of any of the rivers or streams located within the Trail corridor. Moreover, these activities would not affect the functionality of any floodplains and/or wetlands present within the Trail corridor.

The use of fire retardants and/or foams could potentially cause temporary to short-term moderate impacts to water quality and aquatic life if misapplied or mishandled (USDA, 2000a). Retardants contain ammonia and phosphate or sulfate ions, which can change the chemistry of a water body, thus making it temporarily lethal to fish and other aquatic organisms; the principal toxic component of retardant chemicals in aquatic systems is ammonia (Adams and Simmons, 1999). Foams contain detergents that can interfere with the ability of fish gills to absorb oxygen. The degree of impact would depend on the volume of retardant/foam dropped into the water body, the size of the water body, and the volume of flow in the stream or river. For example, if an 800-gallon drop is made into a fast flowing river, it is likely that the lethal effects to aquatic resources would be short-lived as dilution below the toxic level is quickly achieved. On the other hand, a 3,000-gallon drop in a stagnant pond would likely cause toxic levels to persist for some time (USDA Forest Service, 2001). In most cases, water would be used in lieu of chemical retardants, and if they are deemed necessary, standard best management practices state that chemical retardants should not be used within 100 feet of surface water resources. These provisions would minimize direct impacts to water resources from chemical retardant use.

3.2.2.2 Alternative 2 (NPS Preferred Alternative)

General short-term adverse indirect impacts to water resources and floodplains under this Alternative, from wildland fires and wildland fire suppression activities would be similar to those described under the "No Action" Alternative. However, in light of the additional mitigation measures employed during fire management activities, there would be negligible direct impacts on surface water resources.

Conclusion

The general impacts to water quality between the two alternatives would be similar in nature and very minor. The implementation of any of the alternatives would not impair water resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the Trail, (2) key to the natural or cultural integrity of the Trail or opportunities for enjoyment of the Trail, and (3) identified as a goal in the Trail's general management plan or other Park Service planning documents.

3.3 VEGETATION

3.3.1 *Affected Environment*

Vegetation along the Appalachian National Scenic Trail ranges from spruce-fir boreal forests and northern hardwoods (beech, birch, and maple) in Maine, Vermont, and New Hampshire, to northern hardwood-hemlock forests in Massachusetts, Connecticut, and New York. From New Jersey south, the Trail travels mostly through eastern hardwood forests, then onto oak-hickory-pine forest, southern mixed forest, and southern pine forests in Tennessee and Georgia. Many areas of the Trail are located on ridge crests with rock outcrops while other areas traverse grasslands, wetlands and bogs, glades and scrubs. Figure 3-1 shows the different vegetative communities found along the Trail.

While fire is a natural part of every vegetative community found along the Trail, the natural frequency at which it occurs varies over the length of the Trail. The fire frequency in the northern portions of the Trail, Maine to Pennsylvania historically has ranged anywhere from between 0 to 200+ years. That fire frequency increases to 0 to 35 years from Pennsylvania south. The Condition Class throughout the Trail ranges from one to three, with most of the Trail being classified as Condition Class 2, which means that the natural fires regime in those areas have been moderately altered (see Textbox for Condition Class Definitions, see Figure 3-2 for Condition Classes along the Trail).

Condition Class: *an expression of the departure of the current condition from the historical fire regime.*

Condition Class 1 – Fire regimes are within an historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and function within an historical range (Schmidt, et al, 2000).

Condition Class 2 – Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime (Schmidt, et al, 2000).

Condition Class 3 – Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range. Where appropriate, these areas may need moderate levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical fire regime (Schmidt, et al, 2000).

The majority of wildland fires that do occur are usually are of low to mixed severity (see Figure 1-1). Low severity fires are generally nonlethal to the dominant vegetation and do not substantially change the structure of the dominant vegetation. In low severity fires, approximately 80 percent or more of the aboveground dominant vegetation survives fires. A mixed severity fire regime is where fire either causes selective mortality in the dominant vegetation, depending on different tree species' susceptibility to fire, or varies between low severity and stand replacement. (USDA, 2000b)

There are areas along the Trail, however where the severity can lead to almost total stand replacement. A stand-replacement fire regime applies to fires that kill aboveground parts of the dominant vegetation and changes the aboveground structure substantially. Approximately 80 percent or more of the aboveground dominant vegetation either is consumed or dies as a result of fires. Stand-replacement fires are common in northern forests. Areas along the Appalachian Trail where stand-replacement fire regimes occur, are mostly in scattered areas of Pennsylvania, New Hampshire, and Maine. Major vegetation types experiencing stand-replacing fire regimes include stands dominated by spruce and balsam fir along with coniferous bogs (See Figures 1-1 and 3-1). All of these vegetative types are characterized by stand-replacement fire regimes having different fire cycles that vary according to climate and topography.

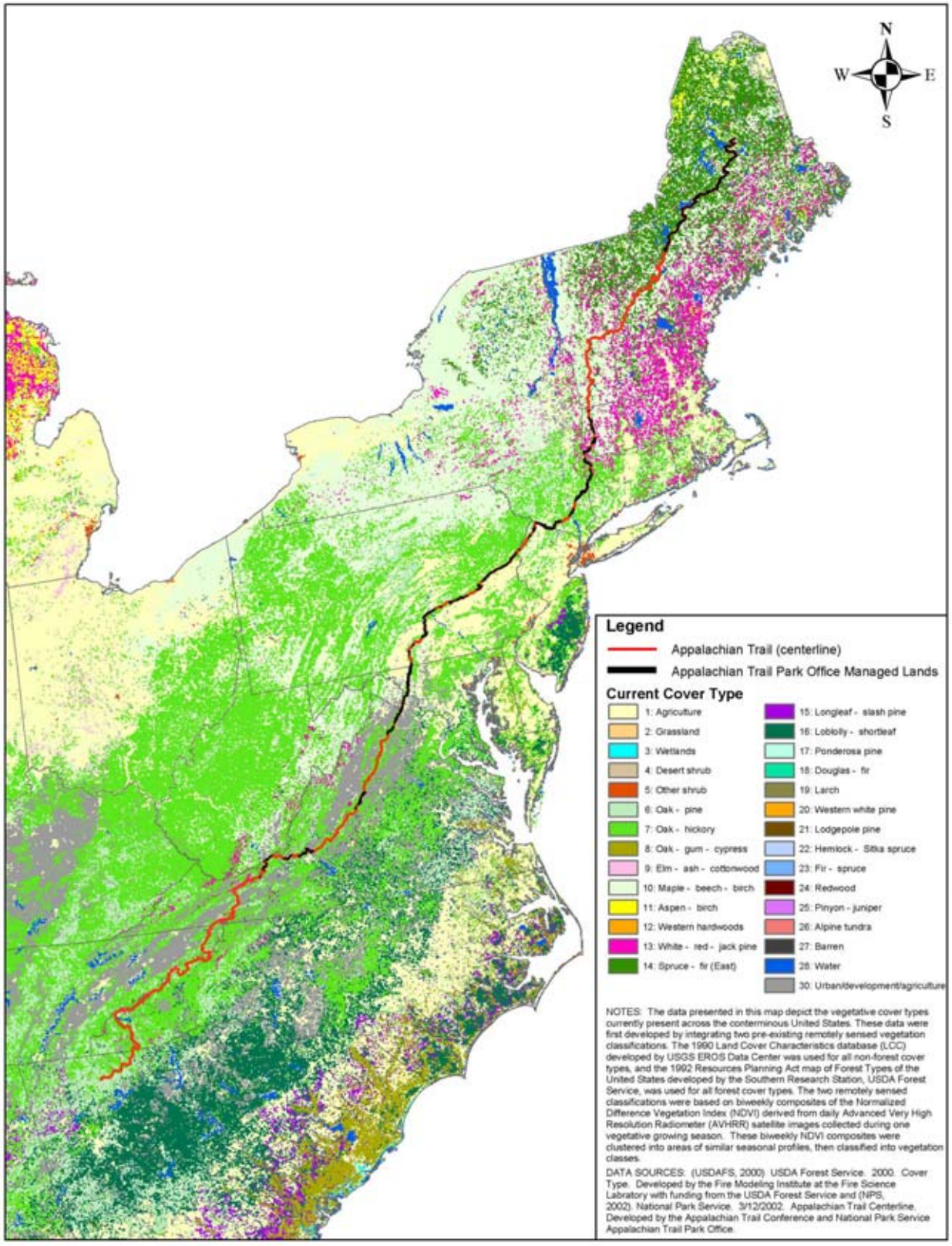

Figure 3-1 Vegetative Communities along the Appalachian Trial

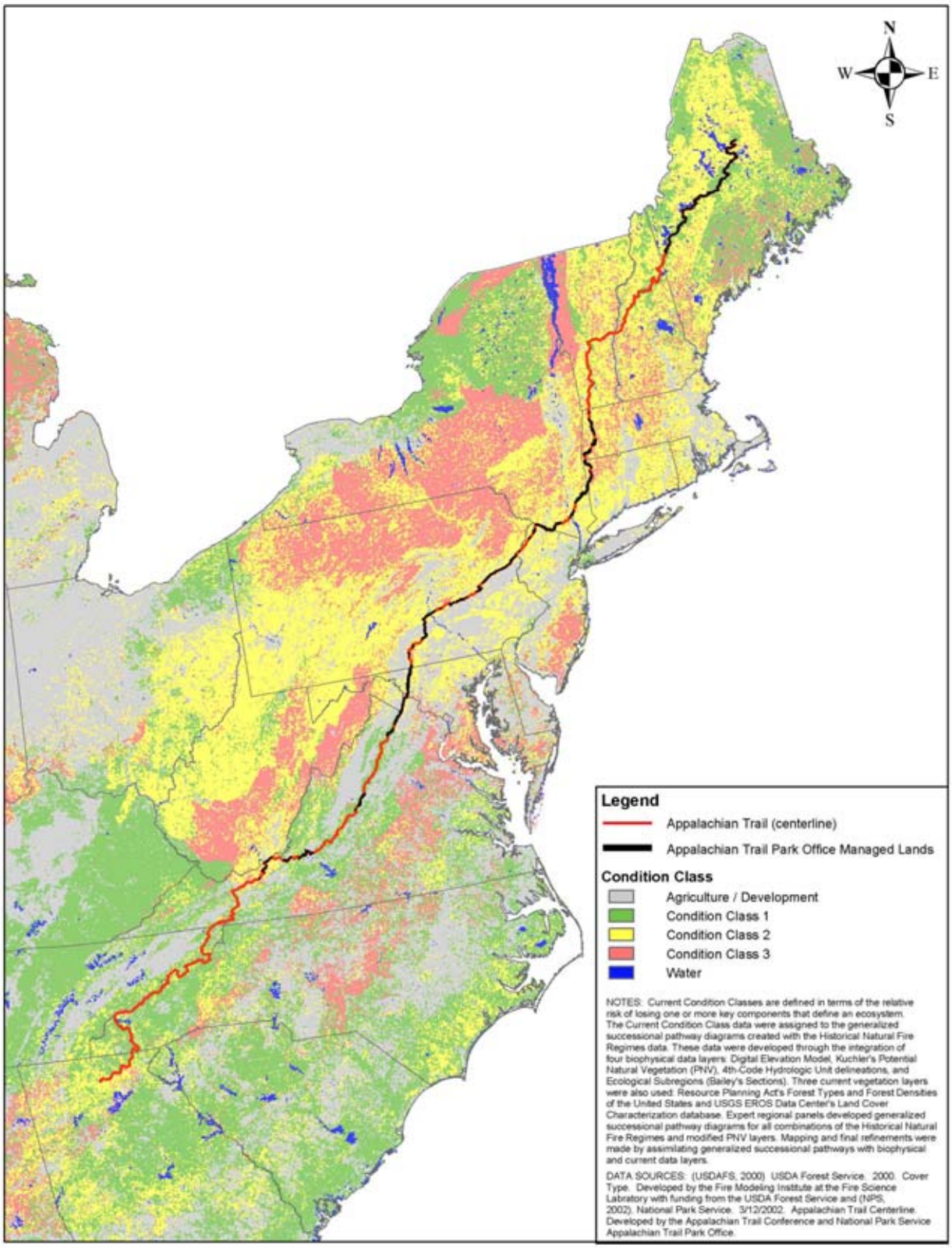

Figure 3-2 Condition Classes along the Appalachian Trail

3.3.2 *Environmental Consequences*

Vegetation impacts were qualitatively assessed using professional judgment based on the presence/absence of plant species, literature reviews, and by looking at the different fire regimes that occur along the Trail.

3.3.2.1 Alternative 1 (No Action)

Proposed activities with the potential to impact vegetation include wildland fire suppression activities and wildland fire exclusion. Fire suppression activities could result in the mortality of plants and trees in the areas where wildland fire suppression is taken place. The digging of firelines, removal of trees, and setting of backfires are all examples of wildland fire suppression tactics that could cause mortality of plants. These adverse impacts are expected to be minor because the loss of individual members of a given plant species would be limited to the area of treatment only, and would not likely jeopardize the viability of the populations on and adjacent to the Trail. These impacts would be short-termed, as native vegetation would be expected to recolonize after wildland fires had occurred. However, any fire suppression activities that resulted in soil disturbance (e.g. building of firelines) would have minor adverse impacts by making those areas more susceptible to the spread of invasive exotics that thrive in open disturbed areas, such as Japanese honeysuckle and multiflora rose. Additionally, special considerations should be taken if a rare plant population is present, to ensure that a vegetative species is not jeopardized.

While wildland fires would occur on ATPO managed lands, because of the ATPO's current policy of full wildland fire suppression, they would not be of the same scope or severity as they were historically. The absence of a natural fire regime within the Appalachian Trail ecosystem through total suppression could facilitate increased "unnatural" changes in habitat structure and species composition, over the long term. In general, these changes would probably not be advantageous to native vegetation that are adapted to or dependent on the historic fire regime. In particular, noxious weeds and/or fire-intolerant plant species could increase in number and out-compete fire-adapted and fire-dependent native species.

Total fire suppression can also led to a significant buildup of fuels and increased forest health problems. The excessive increase in fuels could eventually result in more intense and severe fires (i.e. a low-frequency, high-intensity fire regime), in spite of concerted suppression efforts. Over the mid- to long-term, the buildup of dangerous fuels in the form of highly flammable litter and/or an unnaturally dense midstory with ladder fuels that can carry a surface fire into the forest canopy, would likely change the role of fire from that of stand management to stand replacement (Hunter, 1990). Thus, over time, this alternative would increase the very hazard that it aims to prevent.

Exclusion of wildland fire can also change the vertical structure of forest stands. Fire exclusion can lead to the development of a mid-story of trees and shrubs in stands that would normally consist only of an over- story of large trees with thick, fire-resistant bark, and an understory of grasses and other smaller plants that can regrow quickly after a fire. For example, in the southeastern U.S. shade-tolerant hardwoods will occupy the understory and choke out the

herbaceous stratum unless there is regular burning (Hunter, 1990). Thus, while fire exclusion might initially foster increased vertical diversity by allowing a new stratum to develop; over time there will be a decrease in fire tolerant, early successional trees and their herb and shrub associates.

3.3.2.2 Alternative 2 (NPS Preferred Alternative)

Proposed activities with the potential to impact vegetation include wildland fire suppression activities. General vegetation impacts from the exclusion of wildland fire and wildland fire suppression activities would be similar to those described under the "No Action" Alternative. However, impacts resulting from wildland fire suppression tactics would be lessened with the agreements developed between the ATPO and local fire departments and state agencies to ensure the protection of park resources from wildland fire suppression activities. For example, if fire suppression activities resulted in soil disturbance (firelines) mitigations would call for those area to be re-contoured, water barred, and possibly seeded (with native plant species)

In addition, with local and state agencies having a greater knowledge of ATPO boundaries, and having better communications with park headquarters regarding wildland fires on ATPO lands, better and faster assessments of damages would be possible by the Appalachian Trail Park officials, which in turn would facilitate the planning and coordination of those mitigation efforts.

Conclusion

Both alternatives would result in minor, temporary and localized adverse impacts resulting from wildland fire suppression. However, those impacts would be lessened through the mitigation measures and state and local agreements detailed in the NPS Preferred Alternative. In addition, the implementation of either alternative would have minor adverse impacts to vegetation resources since they would not result in the restoration of the historic fire regime, which would benefit native vegetation over the long term. Furthermore, wildland fire exclusion, over time, would facilitate the buildup of combustible matter in the understory and on the surface, providing excessive tinder, which could cause more damaging, higher intensity wildland fires when fires do occur.

The implementation of any of the alternatives would not impair vegetation resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the Trail, (2) key to the natural or cultural integrity of the Trail or opportunities for enjoyment of the Trail, and (3) identified as a goal in the Trail's general management plan or other Park Service planning documents.

3.4 WILDLIFE

3.4.1 *Affected Environment*

Because much of the Trail corridor is located in areas currently under Federal or State ownership and management, wildlife is considered abundant. The natural habitats along the Appalachian Trail support a great variety of wildlife. In most cases, the narrowness of the Trail corridor

precludes management practices that would significantly enhance habitat to a point of improving a species' over-all health, distribution, or range. However, in areas where there is increasing pressure from development, the corridor provides an important source of forage and cover that sustains populations of mammals and birds. Moose, white-tailed deer, black bears, wild boars, bobcats, coyotes, fishers, otters, and beavers are some of the larger mammals that have been reported within the Trail corridor. Small mammals include mice, chipmunks, rabbits, and squirrels, foxes, raccoons, opossums, skunks, groundhogs, porcupines, bats, weasels, shrews, minks, and muskrats are also common. Tree frogs and bullfrogs inhabit wet areas in warm weather, in addition to several species of lizards, snakes (both poisonous and nonpoisonous) are common south of New England, and streams and ponds are home to salamanders, bass, trout, bream, sunfish, catfish, and crayfish. The Trail corridor also provides critical nest and den sites for species such as raptors, songbirds, and waterfowl. The Appalachian Mountain ridgeline is also an important flyway for the migration of raptors.

3.4.2 *Environmental Consequences*

The effects of the alternatives on wildlife were qualitatively assessed using professional judgment based on literature reviews, general knowledge, and research specific to the area.

3.4.2.1 Alternative 1 (No Action)

Proposed activities with the potential to adversely impact wildlife include wildland fire suppression activities, and the exclusion of wildland fire. All the fire suppression activities could result in the temporary displacement of wildlife or in the mortality of individuals. The loss of individual members of a given species, however, would not jeopardize the viability of the populations on and adjacent to the Trail. Most species of wildlife native to the Trail corridor are adapted to and can survive wildland fire (Hunter, 1990).

Excluding fire from a landscape has two impacts on animal habitat; first, it increases the abundance and continuity of late-successional stages. Second, it changes fuel quantities and fuel arrangement, at least for a time. However, the degree at which these impacts affect habitat along the trial varies with the natural fire frequencies of the Trail, and the specific ecosystems that developed according to those frequencies. For example, wildland fire exclusion in Maine and New Hampshire, where fire frequencies are naturally low, would not have as significant of an impact as it would have in areas of the Trail where the natural fire frequency is higher (0 to 35 years) (see Figure 1-1). In fact, wildland fire exclusion from the northern portions of the Trail would actually protect wildlife habitat because many times wildland fires in those portions of the Trail are stand replacing. Even though the historic fire frequency history over the majority of the Trail varies, the absence of a natural fire regime within the Appalachian National Scenic Trail ecosystem through total suppression efforts could lead to "unnatural" changes in habitat structure and species composition, over the long term. In general, these changes would probably not be advantageous for native species of plants and animals that are adapted to or dependent to the historic fire regime. Such a distorted fire regime would not help restore and maintain the forest's native diverse plant and wildlife habitats. Moreover, the excessive increase in fuels could eventually result in more intense and severe fires (i.e. a low frequency, high-intensity fire regime), in spite of concerted suppression efforts.

3.4.2.2 Alternative 2 (NPS Preferred Alternative)

Proposed activities with the potential to impact wildlife include building firelines and fire retardant use associated with suppression activities. General wildlife impacts under this alternative would be similar to those described in the "No Action" Alternative. Potential impacts to aquatic species, however, would decrease as the use of fire retardant and fire line construction would not be conducted within 100 feet of surface water resources. Though these standards are currently in place in some areas, through the proposed agreements they would be communicated to the States and local governments to ensure their use on all ATPO-managed lands.

Conclusion

Wildland fire suppression activities from both alternatives would temporarily displace some wildlife species, and increase the possibility of individual mortality of some species. Excluding wildland fire would have minor impacts to wildlife habitats found along the Trail over the long term.

The implementation of any of the alternatives would not impair wildlife resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the Trail, (2) key to the natural or cultural integrity of the Trail or opportunities for enjoyment of the Trail, and (3) identified as a goal in the Trail's general management plan or other National Park Service planning documents.

3.5 THREATENED AND ENDANGERED SPECIES

3.5.1 *Affected Environment*

The Federal Endangered Species Act prohibits harm to any species of fauna or flora listed by the U. S. Fish and Wildlife Service (USFWS) as being either threatened or endangered. Such harm includes not only direct injury or mortality, but also disrupting the habitat on which these species depend.

There are twelve known occurrences of federally listed threatened and endangered species within the Trail corridor (The Trail corridor is made up of the lands generally about 500 feet on either side of the actual Trail footpath). However, none has been documented on ATPO administered lands. Inventories have been conducted in all fourteen states of the Trail, though some additional inventory work is currently being conducted that may identify a federally listed threatened and endangered species. If this occurs on ATPO administered lands, appropriate action will be taken to protect these species as needed. Table 3-1 gives a current list of those federally listed species found within the Trail corridor.

Table 3-1 Federally Listed Species found within the Appalachian Trail corridor

Species	Scientific Name	Federal Status	Global Rank[1]	Location
Indiana Bat	*Myotis sodalis*	Endangered	G2	VA to ME
Canada Lynx	*Felis canadensis*	Threatened	G5	ME/NH (USFS)
Robbins' cinquefoil	*Potentilla robbinsiana*	Delisted	G1	NH (USFS)
small whorled pogonia	*Isoteria medeoloides*	Threatened	G2	VA to ME
bog turtle	*Clemmys muhlengergii*	Threatened	G3	MD to ME
Virginia northern flying squirrel	*Glaucomys sabrinus fuscus*	Endangered	G5, T2	VA (USFS)
Shenandoah salamander	*Plethodon shenandoah*	Endangered	G1	VA (other NPS lands)
Roan Mtn. bluet	*Hedyotis purpurea var. montana*	Endangered	G1	NC/TN (USFS)
spreading avens	*Geum radiatum*	Endangered	G1	NC/TN (USFS)
rock gnome lichen	*Gymnoderma lineare*	Endangered	G2	NC/TN (USFS)
Carolina northern flying squirrel	*Glaucomys sabrinus coloratus*	Endangered	G5, T1	NC/TN (USFS)
bald eagle	*Haliaeetus leucocephalus*	Threatened	G4	Entire Trail

[1] Global Rank/Infraspecific Taxon (T) Rank

G1 = Critically imperiled globally because of extreme rarity or because of some factor(s) making it especially vulnerable to extinction. (typically 5 or fewer occurrences or very few remaining individuals or acres)

G2 = Imperiled globally because of rarity or because of some factor(s) making it very vulnerable to extinction throughout its range. (6 to 20 occurrences or few remaining individuals or acres)

G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range. (21 to 100 occurrences)

G4 =Widespread, abundant, and apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery. Thus, the element is of long-term concern. (usually more than 100 occurrences)

G5 = Demonstrably widespread, abundant, and secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5, T1 = A critically imperiled subspecies of an otherwise widespread and abundant species.

G5, T2 = An imperiled subspecies of an otherwise widespread and abundant species.

Indiana Bat – The largest Indiana bat hibernaculum in the northeastern United States is within 50 miles of the AT in western Connecticut and southwestern Massachusetts. Little is known about summer habitat use and distribution after the bats leave the hibernaculum in spring, and as a result, Indiana bats may potentially be present in forested areas within the Trail corridor (USFWS, 2004).

Canada Lynx – Canada lynx were historically known to occur in New Hampshire until approximately the 1960s, and are presently known to occur in Franklin, Somerset, Piscataquis, Aroostook, and Penobscot Counties in Maine (USFWS, 2004).

Robbins' cinquefoil - Robbins' cinquefoil is a "small perennial herb which grows in densely tufted rosettes measuring 1 to 3 inches across, in the exposed alpine zone of the White

Mountains, New Hampshire. It is found on relatively stony, barren soils that cover a much finer silty soil derived from erosion of the surrounding parent rocks. The soils, though not waterlogged, are highly saturated. It is found at elevations ranging from 4,500 to 5,000 feet above sea level (USFWS, 2001a).

Small whorled pogonia - This species is generally known from open, dry, deciduous woods with acid soil. It occurs in habitat where there is relatively high shrub coverage or high sapling density (USFWS, 1996).

Bog turtle – Bog turtles have very specialized habitat requirements. They inhabit wetlands with soft, muddy bottoms; clear, cool, slow-flowing waters; and open canopies. Known bog turtle habitat crosses the Trail corridor in New Jersey (USFWS, 2001b).

Virginia northern flying squirrel – The Virginia northern flying squirrel are most commonly found Virginia and West Virginia in spruce-fir forests mixed with northern hardwoods. In West Virginia, the northern flying squirrels are tightly associated with high elevation, mesic, spruce-fir habitat types (WVDNR, 1998).

Shenandoah salamander - This species is confined to deep pockets of soil within the talus on the north and northwestern faces of its three mountain ranges in mixed-conifer forest. Their habitat is shaded with moisture present on the faces of rock ledges. It is usually found under rocks and surface debris (VDGIF, 2003).

Spreading avens and the Roan Mountain bluet – Both species are located in the southern Blue Ridge Mountains on high-elevation cliffs (4,200-6,300 feet), outcrops, and steep slopes that are exposed to full sun; also in thin, gravelly soils of grassy balds near summit outcrops (USFWS, 1990).

Rock Gnome Lichen - Rock gnome lichen is endemic to the southern Appalachian Mountains of North Carolina and Tennessee, where it is limited to 32 populations. It occurs only in areas of high humidity, either at high elevations, or in deep river gorges at lower elevations. It is primarily limited to vertical rock faces where seepage water from forest soils above the cliffs flows at (and only at) very wet times. Most populations occur above an elevation of 1,524 meters (5,000 feet) (USFWS, 1996).

Carolina northern flying squirrel - The northern flying squirrel is known from five isolated localities: three in the western mountains of North Carolina, and two localities in the eastern mountains of Tennessee the northern flying squirrel occurs primarily in the ecotone, or vegetation transition zone, between the coniferous and northern hardwood forests. Both forest types are used in the search for food, while the hardwood areas are needed for nesting sites (USFWS, 1991).

Bald Eagle – The Trail corridor could support bald eagle winter roosting areas and nesting areas. Eagle habitat is area with low human disturbance, suitable forest structure, and abundant prey. Because fish are important prey, nests are nearly always associated with fishable waters (USFWS, 2002).

3.5.2 *Environmental Consequences*

Impacts to Federally listed Threatened and Endangered Species were qualitatively assessed using presence/absence determinations and literature reviews.

3.5.2.1 Alternative 1 (No Action)

Given that fairly comprehensive species inventories have been conducted on all ATPO managed lands in cooperation with the natural heritage programs of each state, and no documented occurrences of any federally listed threatened or endangered species have been identified on ATPO managed lands, it is not likely that federally listed species on lands administered by the ATPO would be adversely affected.

No adverse impacts are expected from wildland fire exclusion to any of the federally listed species found within the Trail corridor. None of the federally listed species located within the Trail corridor, with the possible exception of the small whorled pogonia, spreading avens and the Roan Mountain bluet, would appear to be directly impacted by wildland fire exclusion because none of those species are known to be fire dependant. The rock gnome lichen, Shenandoah salamander, and Robbins' cinquefoil all inhabit areas of high moisture, which makes the occurrence of wildland fire rare. The Carolina and Virginia northern flying squirrels occur in areas where wildland fires are more common, are highly mobile, and should not be directly affected by wildland fire. However, because of their limited range in the region, the squirrels are susceptible to habitat disturbance, for example, trees used for denning by the squirrels might be destroyed by wildland fire, forcing the squirrels to seek new habitat (USFWS, 1991).

While no studies have been conducted on the role fire plays in the life cycle of the small whorled pogonia, the fact that they occur in open, dry, deciduous forests with relatively high shrub and sapling density suggest that the species is fire adapted. There have also been no studies on the fire effects on spreading avens or the Roan Mountain bluet. Studies have shown that the grassy balds found in the southern Appalachian Mountains are kept clear of encroaching woody vegetation through dense herbaceous cover, harsh environment, grazing, and many times wildland fires, which may suggest that these species are fire adapted.

While there are currently no documented occurrences of any federally listed Threatened or Endangered species found on lands administered by the ATPO, if any were to occur, everything possible would be done to protect those species from any adverse impacts resulting from wildland fire suppression. However, while it is assumed that proper suppression techniques that minimize adverse impacts to environmental resources would be used by local and state departments, with no cooperative agreement, local fire departments might be unaware of areas where listed species occur or NPS guidance towards mitigations meant to protect critical habitat for threatened or endangered caused by wildland fire or wildland fire suppression activities. This could result in the accidental take of a listed species or the unnecessary damage of critical habitat.

As stated in the National Park System's 2001 Management Policies, if a federally- or state-listed species were to be documented within ATPO boundaries, active management programs would be

undertaken to inventory, monitor, restore, and maintain the listed species' habitats, control detrimental non-native species, control detrimental visitor access, and re-establish extirpated populations as necessary to maintain the species and habitats upon which they depend. The trail would also manage designated critical habitat, essential habitat, and recovery areas to maintain and enhance their value for the recovery of threatened and endangered species. Measures taken to protect those species, or their required habitat, would supersede any management activities outlined in the FMP in the event any of those management activities would negatively impact the listed species.

3.5.2.2 Alternative 2 (NPS Preferred Alternative)

General impacts from wildland fire exclusion and wildland fire suppression activities under this alternative would be similar to the "No Action" Alternative. However, fire management operations defined in the proposed FMP would consider appropriate actions needed to identify and protect from adverse effects whenever any rare, threatened or endangered species along with any critical habitat that may occur within any ATPO administered lands. Actions such as building of firelines would be avoided within all known critical habitat and areas where T&E species are known to exist. When fire line construction is not discretionary and deemed necessary to protect human life or property in proximity to these resource locations, it would involve as little ground disturbance as possible and be located as far the listed species and its habitat as possible.

In addition, with local and state agencies having a greater knowledge of ATPO boundaries, and having better communications with park headquarters regarding wildland fires on ATPO lands, better and faster assessments of damages would be possible by the ATPO officials, which in turn would facilitate the planning and coordination of those mitigation efforts.

Consultation with the U.S. Fish and Wildlife on March 29, 2004 (See Appendix A) has determined that the implementation of the Trail's proposed FMP would not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of critical habitat if at all possible.

Conclusion

While there are no federally listed species documented on any ATPO administered lands there would be no impacts from the implementation of either alternative. The implementation of any of the alternatives would not impair air quality resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the Trail, (2) key to the natural or cultural integrity of the Trail or opportunities for enjoyment of the Trail, and (3) identified as a goal in the Trail's general management plan or other Park Service planning documents.

3.6 AIR QUALITY

3.6.1 *Affected Environment*

Air quality varies considerably throughout park lands depending on atmospheric conditions and location. While the Trail passes through several congressionally designated wilderness areas (Class I air quality areas), most areas of the Trail are Class II air quality areas. Air quality can be adversely affected by wildland fire although most fires are of relatively short duration.

3.6.2 *Environmental Consequences*

Air quality impacts were qualitatively assessed using literature reviews and professional judgment based on consideration of fuel levels and types, size of area that could burn, and knowledge of air chemistry.

3.6.2.1 Alternative 1 – No Action

The combustion of vegetation produces various chemical compounds. These compounds include nitrogen oxides (NOx), organic compounds, carbon monoxide, and particulate matter or small particles (PM). The pollutants that affect visibility that derive from vegetative burning are PM_{10}, $PM_{2.5}$, nitrates, ozone, organic carbon, and elemental carbon. Ozone, a measurable constituent of "smog" or haze, is not directly produced by fires, but as a byproduct of the chemical reaction other combustion products (NOx and volatile organic compounds or VOC's). About 90 percent of smoke particles from wildland and prescribed fires are PM_{10} and about 70 % are $PM_{2.5}$ (MNICS, 2001).

One of the main factors determining the degree of air pollution from wildland fires is smoke dispersion. Smoke dispersion is a function of ventilation, which refers to the process within the atmosphere that mixes and transports smoke away from its source. Ventilation is a function of stability, mixing height, and transport winds. Mixing height is defined as the upper limit of a mixed layer in unstable air, in which upward and downward exchange of air occurs. The transport wind is the arithmetic average (speed and direction) of wind in the mixing layer.

Smoke consists of dispersed airborne solids and liquid particles, called particulates, which could remain suspended in the atmosphere for a few days to several months. Particulates can reduce visibility and contribute to respiratory problems. Very small particulates can travel great distances and add to regional haze problems. Regional haze can sometimes result from multiple burn days and/or multiple owners burning within an airshed over too short a period of time to allow for dispersion.

Under this Alternative, negative air quality impacts resulting from wildland fires would be minor and temporary and be reduced by suppression efforts. However, wildland fire suppression would lead to greater quantities of fuels accumulating over a longer interval, which would ultimately result in larger (but less frequent) wildland fires. At these times, much greater amounts of smoke would be generated, probably large enough to exceed the NAAQS for at least particulate matter, with a consequent temporary decline of the immediate area's air quality.

3.6.2.2 Alternative 2 (NPS Preferred Alternative)

Impacts to air quality resulting from wildland fire suppression under this alternative would be the same as described in the "No Action" Alternative.

Conclusion

The "No Action" Alternative and the "NPS Preferred Alternative" would have minor and short-term impacts on air quality. The implementation of any of the alternatives would not impact air quality resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the Trail, (2) key to the natural or cultural integrity of the Trail or opportunities for enjoyment of the Trail, and (3) identified as a goal in the Trail's general management plan or other Park Service planning documents.

3.7 VISITOR USE AND EXPERIENCE

3.7.1 *Affected Environment*

The Appalachian National Scenic Trail is a 2,167-mile footpath along the ridge crests and across the major valleys of the Appalachian Mountains from Katahdin in Maine to Springer Mountain in north Georgia. The Trail traverses Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, West Virginia, Virginia, Tennessee, North Carolina and Georgia. The Appalachian Trail is used by day, weekend and other short-term hikers, section hikers and thru-hikers. Thru-hikers hike the entire length of the Trail in one season. It is estimated that two to three million persons visit the Trail each year, with about 2,000 of them attempting to hike the entire Trail in one season. There are numerous NPS owned facilities along the Trail.

3.7.2 *Environmental Consequences*

Impacts to visitor use and experience were qualitatively assessed using professional experience in light of the intensity and duration of fire management activities. Visual resource impacts in this environmental assessment were assessed in terms of scenic integrity, visual wholeness, and unity of the landscape.

3.7.2.1 Alternative 1 (No Action)

There would be some short-term reduction in scenic integrity and visitor use and experience during and immediately following any wildland fire suppression activities from the presence of engines and thinning or fire crews. Short-term reduction in scenic integrity, however, would be minor because fire management activities would likely involve only short-term presence of vehicles and people. In addition, visitor use would also be temporarily affected under this alternative since access to those locations where crews were conducting wildland fire suppression activities would be restricted.

Any wildland fire would likely produce short-term smoke accumulations that impact local visual quality. Minimizing smoke emissions through immediate suppression would reduce any short-term impacts.

Though the No Action alternative would not directly affect visitor use and experience, the event of a wildland fire within or adjacent to the Trail could temporarily affect visitor use and experience depending on the severity of the fire and situation at hand, as visitors could be evacuated to off-site and safe locations.

3.7.2.2 Alternative 2 (NPS Preferred Alternative)

General impacts to visitor use and experience would be similar to those described under the "No Action" Alternative.

Conclusion

Negative impacts to the Trail, under both alternatives, would be very minor and temporary during wildland fire suppression operations (e.g. trail closures or limited access to certain areas, presence of work crews in the vista).

3.8 PARK OPERATIONS

3.8.1 *Affected Environment*

NPS is assisted in the management and maintenance of ATPO lands by a framework of federal, state, and non-governmental organization partners, including the Appalachian Trail Conference and members of the Appalachian Trail Cooperative Management System. ATPO has responsibility agreements with the USFS, 6 other units of the NPS, and each of the 14 states through which the Trail passes. The Trail is used by day, weekend and other short-term hikers, section hikers and thru-hikers. It is estimated that two to three million persons visit the Trail each year, with about 2,000 of them attempting to hike the entire Trail in one season. There are numerous NPS owned facilities along the Trail, including shelters and parking lots.

3.8.2 *Environmental Consequences*

Impacts to park operations were qualitatively assessed using professional experience in light of the intensity and duration of fire management activities.

3.8.2.1 Alternative 1 (No Action)

With the assistance of fire management personnel from cooperators, local, state, and federal agencies, park operations would not experience significant impacts under this alternative. In the event of a wildland fire within or adjacent to the Trail, park operations could be temporarily affected depending on the severity of the fire and situation at hand as visitors and non-essential park personnel were evacuated to off-site and safe locations. There would likely be some short-term suspension of non-critical park operations during and immediately following any wildland

fire suppression activities from the redirected focus of park resources on the activities. Access to those locations where crews were conducting wildland fire suppression activities would be restricted.

3.8.2.2 Alternative 2 (NPS Preferred Alternative)

General impacts to park operations would be similar to those described under the "No Action" Alternative.

Conclusion

Negative impacts to the Trail operations, under both alternatives, would be very minor and temporary during wildland fire suppression operations (e.g. limited access to certain areas, movement of park personnel).

3.9 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their proposals on historic properties, and to provide state historic preservation officers, and, as necessary, the Advisory Council on Historic Preservation a reasonable opportunity to review and comment on these actions. The consultation process with all applicable state historical commissions was initiated in December of 2003. Letters and comments from these offices can be found in Appendix A.

3.9.1 *Affected Environment*

The lands crossed by the Appalachian Trail have a rich history. Parts of the Trail were major travel routes for Native Americans and for settlers pushing west to explore the new frontiers of our country in the 18th and 19th centuries. Earlier travelers and settlers used many of the springs, campsites, gaps, and lookouts along the Trail. These sites, and the objects and other physical evidence left behind by these travelers and settlers, are an important part of our cultural heritage.

A substantial portion of ATPO-managed lands has only recently been acquired. As a result, little systematic cultural resource inventory data exists. In 1999, the Appalachian Trail Park Office and its Trail-management partners initiated the first of a series of state-by-state cultural resource overview and assessment projects to identify, evaluate, and categorize cultural resource sites along the A.T. Additional inventories will be completed as funding permits. Within the areas managed by the Trail office, several efforts to inventory and classify cultural features are currently underway as part of the Strategic Plan. These efforts include twenty-four archaeological site inventories all of which are to be completed by September 30, 2005.

Cultural resources along the Trail range from individual artifacts (arrowheads, tools, lead bullets, housewares, and other items for human use) to plaques, gravestones, monuments, structures, and large areas of land. Historic campsites, farms, village sites, battlefields, and other broad areas of human occupation or use are also culturally significant. The Appalachian Trail itself is an important part of our nation's heritage, as in 1921 it was conceived as a scenic footway linking

the high ridges of the eastern seaboard, and as it exposes Trail users to the great range of land forms, history, and uses of the land that are found along the Appalachian Mountains.

Nineteen National Register of Historic Places properties have been listed by Federal or State Agencies on trail lands. These include:

Georgia
Blood Mountain Shelter
Walasi-Yi Inn

Virginia
Burke's Garden Rural Historic District
Skyline Drive Historic District
George T. Corbin Cabin and Stone Wall
Big Meadows Site

West Virginia
B&O Railroad Potomac River Crossing
Harpers Ferry Historic District

Maryland
Washington Monument

Pennsylvania
Boiling Springs Historic District
Carbon County Section of the Lehigh Canal
Waterville Bridge

New Jersey
High Breeze Farm

New York
Bear Mountain Bridge & Toll House

Connecticut
Bull's Bridge
Falls Village District

Massachusetts
Mount Greylock Summit Historic District
Tyringham Shaker Settlement Historic District

New Hampshire
Tip-Top House

Over 1,300 individually named structures and other landscape components occur along the entire length of the Appalachian Trail. These properties include shelters, viewpoints, improved roads, bridges, impoundments, buildings, monuments, towers, and railroad grades. For a complete list, please refer to Appendix B.

3.9.2 *Environmental Consequences*

Cultural resource impacts were qualitatively assessed through a presence/absence determination of significant cultural resources and mitigation measures to be employed during wildland fire suppression operations.

3.9.2.1 Alternative 1 (No Action)

Proposed activities with the potential to adversely impact known and unknown cultural resources include both wildland fires and wildland fire suppression activities. The effects of fire on cultural resources are still not well understood or documented. For example, post-fire observations are often unable to distinguish between damage to archaeological resources caused by the fire itself from damage that was pre-existing. Thus, the following discussion of potential

impacts of fire and fire management on cultural resources is of necessity general and somewhat speculative.

Both wildland fires and wildland fire suppression can affect cultural resources and historic properties. Fires themselves can and often do destroy historic structures or properties, especially those constructed of wood or other flammable material. Historic districts and cultural landscapes are also somewhat vulnerable to adverse impacts or destruction from wildland fires.

The vulnerability of subsurface archaeological resources and artifacts to fire depends not only on the nature of the materials themselves but on the intensity of the fire. Hotter surface fires penetrate more deeply into the subsurface and can potentially cause more damage. Glass bottles can be cracked or broken for example. On the other hand, ceramics or objects carved or chipped from stone are likely to be more resistant to fire and heat. Since fires have been a natural part of the Appalachian Trail landscape for centuries prior to the era of fire exclusion in the 20th century, for a subsurface historic object or archaeological artifact to have survived into the 21st century, it must have already withstood at least several and sometimes many previous fires. In addition, clearing firelines associated with fire suppression can damage unknown subsurface cultural and archaeological resources by exposing, crushing, or removing them.

Wildland fire suppression activities conducted along the Trail under this alternative would not be likely to adversely impact known cultural resources, however, adverse impacts could occur, especially to undocumented cultural resources. And while it is assumed that proper suppression techniques which minimize adverse impacts to cultural resources would be used by local and state fire departments, local fire departments may be unaware of known cultural resource areas or NPS mitigation guidance, where no cooperative agreement is in place.

3.9.2.2 Alternative 2 (NPS Preferred Alternative)

Proposed activities with the potential to adversely impact known and unknown cultural resources include both wildland fires and wildland fire suppression activities. There would be no adverse impacts to known cultural resources from wildland fire suppression activities. The NPS would protect known cultural resources, to the greatest extent possible, by implementing the following fire management practices:

- During all fire management activities, the minimum impact tactics policy would be incorporated to the greatest extent feasible and appropriate for the given situation. Tactics directly or indirectly facilitating the protection of archeological/cultural/historic resources include:

    - Keep fire engines or slip-on units on existing roads whenever possible to avoid potential damage to buried cultural artifacts.
    - Restrict the use of heavy equipment for constructing fireline to avoid potential damage to buried cultural artifacts. A bulldozer or plow may be used for fireline construction only in extreme situations along the Trail's boundary to prevent a

fire on park property from spreading to adjacent non-agency land, and then only with the authorization of the Park manager or designee.

- Use existing natural fuel breaks and human-made barriers, wet line, or cold trailing the fire edge in lieu of fireline construction whenever possible.
- Keep fireline width as narrow as possible when it must be constructed.
- Avoid ground disturbance within known archeological/cultural/historic resource locations. When fireline construction is necessary in proximity to these resource locations it would involve as little ground disturbance as possible and be located as far outside of resource boundaries as possible.
- Use soaker hose, sprinklers or foggers in mop-up; avoiding boring and hydraulic action.

A cooperative agreement that outlines these policies and procedures would be signed by both the NPS and each state along the Trail. The cooperative agreement would outline each of the agency's responsibility in the event of a wildland fire. There would be the potential for fire suppression activities to affect unknown cultural resources within the site. Overall, however, this Alternative would likely not adversely impact known cultural resources along the Trail.

Both wildland fire and fire suppression activities pose the potential to adversely affect cultural resources within the areas bounded by the Appalachian National Scenic Trail. However, the mitigation measures included as part of the minimum impact suppression tactics outlined earlier in this proposed FMP, have prioritized cultural resources in an effort to minimize any adverse affects.

In addition, with local and state agencies having a greater knowledge of ATPO boundaries, and having better communications with park headquarters regarding wildland fires on ATPO lands, better and faster assessments of damages or potential damages to the Trail's cultural resources would be possible by the Appalachian Trail Park officials, which in turn would facilitate the planning and coordination of those mitigation efforts.

Conclusion

The cultural resources of the Appalachian Trail would be protected under both alternatives with the suppression of wildland fires. The "NPS Preferred" Alternative, with its additional mitigation measures and local and state agreements, would provide greater protection for the Trail's cultural resources.

The implementation of any of the alternatives would not impair cultural resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the Trail, (2) key to the natural or cultural integrity of the Trail or opportunities for enjoyment of the Trail, and (3) identified as a goal in the Trail's general management plan or other Park Service planning documents.

3.10 CUMULATIVE IMPACTS

The cumulative impacts analysis for the fire management plan environmental assessment considers the past, present, and reasonably foreseeable future actions on land uses that could intensify or compensate for the effects on the resources and that might be affected by the fire Management Plan alternatives. Cumulative impacts vary by resource and the geographic areas considered here are generally the Trail and areas adjacent to the Trail. In some instances, activities might result in both negative and positive impacts when considering the short and long-terms. As a result, some resource categories in Table 3-2 show both positive and negative impacts resulting from a particular activity. The information provided in Table 3-2 is the basis for the cumulative impacts described in Table 3-3.

Table 3-2 Affected Impact Topics and Activities/Land Uses
Contributing to Fire Management Plan Cumulative Impacts

	Soils	**Water Resources**	**Vegetation**	**Wildlife/ T&E Species**	**Air Quality**	**Visitor Use & Experience**	**Park Operations**	**Cultural Resources**
Past, current, and future land acquisition of the ATPO's authorized boundary	+		+	+		+	+	+
Future renovations to the ATPO managed structures						+	+	
Past, current, and future residential/commercial development adjacent to the Trail boundary		-		-	-	-	-	-
Future restoration measures aimed at improving natural conditions.	+	+	+	+		+		
Future increase in visitor use and demand				-		+-	-	

DIRECT/INDIRECT EFFECTS KEY: (+) Positive/beneficial; (-) Negative/detrimental; (Blank) Neutral/no effect

Table 3-3 Cumulative Impacts

Resource	Impacts from Past and Present Activities/Land Uses	Impacts from Future Activities/Land Uses	Impacts from Proposed Actions "No Action", Alternatives 2 (NPS Preferred)	Cumulative Impacts from Proposed Actions
Soils	Beneficial soil impacts as ecological function is restored on lands acquired for inclusion to the Trail.	Future expansion of park infrastructure would have local adverse impact soils on the Trail; beneficial soil impact as ecological function is restored on lands acquired for inclusion to the Trail; Future restoration measures aimed at improving natural conditions improve soil quality.	Wildland fire suppression activities would have temporary and minor adverse effects on soils (soil disturbance, localized erosion); beneficial effects from fire (soil development and soil nutrification) not realized.	Fire Management Plan would not result in significant negative cumulative impacts; "NPS Preferred" Alternative, would contribute the most beneficial cumulative soil impacts through the use of mitigation measures than the "No Action" Alternative.
Water Resources	Past and present residential and commercial development adjacent to the Trail would adversely impact water resources (turbidity, sediment delivery, pollution, water consumption); Beneficial impacts to local watersheds as ecological function is restored on lands acquired for inclusion to the Trail.	Future lands acquired for inclusion of ATPO administer lands protect local watersheds; increased development in areas adjacent to the Trail would directly and indirectly impact water resources (turbidity, sediment delivery, pollution, water consumption);	Wildland fire suppression would have no direct impacts on water resources, and minor indirect impacts (turbidity and sediment delivery from soil erosion).	Fire Management Plan would result in minor cumulative impacts on water resources, the "NPS Preferred" Alternative would contribute the most beneficial cumulative impacts through its mitigations measures to vegetation, while the "No Action" Alternative would contribute the least.
Vegetation	Past and current land acquisition preserves vegetation communities.	Future land acquisition preserves vegetative communities; restoration measures aimed at improving natural conditions would benefit vegetative communities.	Wildland fire suppression would have minor short-term direct adverse impacts on vegetation.	Fire Management Plan would not result in significant cumulative impacts; the "NPS Preferred" Alternative would contribute the most beneficial cumulative impacts through its mitigations measures to vegetation, while the "No Action" Alternative would contribute the least.

Table 3-3 Cumulative Impacts

Resource	Impacts from Past and Present Activities/Land Uses	Impacts from Future Activities/Land Uses	Impacts from Proposed Actions "No Action", Alternatives 2 (NPS Preferred)	Cumulative Impacts from Proposed Actions
Wildlife/T&E Species	Past and current land acquisition preserve wildlife habitat and promote diversity; past and current development adjacent to the Trail reduce wildlife habitat and fragment wildlife corridors and edge habitat.	Future land acquisition would preserve wildlife habitat and promote diversity; future restoration measures aimed at improving natural conditions would benefit wildlife; future increase in visitor use and demand would disturb wildlife.	Wildland fire suppression activities fire would result in minor, short-term disturbance and displacement with minimal species loss.	Fire Management Plan would not result in significant cumulative positive or negative impacts; the "NPS Preferred" Alternative would contribute the most to wildlife beneficial cumulative impacts through its mitigations measures, while the "No Action" Alternative would contribute the least.
Air Quality	Commercial and industrial practices emit pollutants and particulate matter; automobiles contribute to some temporary deterioration in air quality and visibility	Similar effects as described in past and present activities/land uses	Wildland fire suppression would reduce smoke emission from wildland fires	Class II air quality standards would not be violated; Fire Management Plan would not result in significant cumulative negative impacts
Visitor Use and Experience	Past and current land acquisition provides additional recreational opportunities for the visitor; past and current development adjacent to the Trail degrades user experience	Future residential and commercial degrade visitor use and experience; future restoration measures aimed at improving natural conditions would benefit visitor use and experience; future increase in visitor use and demand would degrade experience of those looking for peace and solitude	Wildland fire suppression would have minor and temporary visitor use and experience impacts	Fire Management Plan would not result in significant cumulative impacts; the "NPS Preferred Action" Alternative would contribute the most to beneficial cumulative visitor use and experience impacts, while the "No Action" Alternative would contribute the least
Park Operations	Past and current land acquisition provides additional resources to be managed; past and current development adjacent to the Trail degrades user experience	Future residential and commercial development bring the urban-wildland interface closer to the Trail; future restoration measures aimed at improving natural conditions would benefit park operations	Wildland fire suppression would have minor and temporary park operations impacts	Fire Management Plan would not result in significant cumulative impacts; the "NPS Preferred Action" Alternative would contribute the most to beneficial cumulative park operations impacts, while the "No Action" Alternative would contribute the least
Cultural Resources	Past and current land acquisition protects cultural resources; Past and present residential and commercial development adjacent to the Trail would adversely impact cultural resources	Similar effects as described in past and present activities/land uses	Exclusion of wildland fire would help protect the Trail's cultural resources from future wildland fires	Cultural resources protected from wildland fire; Fire Management Plan would not result in significant cumulative impacts; the "NPS Preferred Action" Alternative would have the most beneficial to cumulative cultural resources impacts, while the "No Action" Alternative would contribute the least

Chapter 4 – Consultation and Coordination

4.1 COMPLIANCE REQUIREMENTS

The Appalachian National Scenic Trail is currently managed based on the direction of the approved 1994 General Management Plan. National Park Service (NPS) policy (*Director's Order #18: Wildland Fire Management)* requires that every park unit with burnable vegetation develop a fire management plan (FMP) approved by the Park manager. The FMP serves as a detailed and comprehensive program of action to implement fire management policy principles and goals, consistent with the unit's general management objectives. The Trail's fire management program, guided by federal policy and the Trail's resource management objectives, will serve to protect life, property, and natural and cultural resources. The proposal to prepare a fire management plan for the Appalachian National Scenic Trail is consistent with the Trail's management documents and with the Federal environmental laws and agency regulations listed below.

4.1.1 Federal

4.1.1.1 National Environmental Policy Act

The National Environmental Policy Act requires the consideration of the environmental effects of proposed Federal actions. The act also ensures that environmental information is available to public officials and members of the public before decisions are made and before actions are taken. This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act to evaluate the impacts of the project on the human and natural environment and provide an opportunity for the public to review and comment on the project. Following public and agency review, the Regional Director of the Northeast, National Capitol and Southeast Region will make a determination concerning whether or not the project would result in significant impacts on the human environment. If the project would not significantly impact the human environment, the Regional Director will issue a "Finding of No Significant Impact." If the project would significantly impact the human and natural environment, the Regional Director will issue a "Notice of Intent" to prepare an Environmental Impact Statement.

4.1.1.2 Consultation with the U.S. Fish and Wildlife Service

The purposes of the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) (ESA), include providing "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." According to the ESA, "all Federal departments and agencies shall seek to conserve endangered species and threatened species" and "[e] ach Federal agency shall…insure that any action authorized, funded, or carried out by such agency…is not likely to jeopardize the continued existence of listed species or threatened species".

The U. S. Fish and Wildlife Service administer the ESA. The effects of any agency action that may affect endangered, threatened, or proposed species must be evaluated in consultation with either the U.S. Fish & Wildlife Service or National Marine Fisheries Service, as appropriate.

Implementing regulations that describe procedures for interagency cooperation to determine the effects of actions on endangered, threatened, or proposed species are contained in 50 CFR 402. Section 7 of the ESA requires all Federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat.

The NPS initiated consultation on threatened and endangered species with each of the USFWS offices that have jurisdiction on ATPO-managed land on January 2, 2004. In a letter dated March 29, 2004, the U.S. Fish and Wildlife Service indicated that the proposed project would not likely cause an adverse effect on any federally listed threatened or species of special concern (see Appendix A).

4.1.1.3 Consultations with the State Historic Preservation Officer (SHPO)

Section 106 of the National Historic Preservation Act, as amended (36 CFR 800), requires federal agencies to consider the affects of projects they fund, permit, or license on historic properties that are listed or eligible for listing in the NRHP. Compliance with Section 106 requires agencies to initiate consultation during the project's early planning stages with appropriate parties, including the pertinent State and/or Tribal Historic Preservation Officer(s); identify historic properties within the project's area of potential effect; and determine what impact, if any, the project will have on those resources. Section 106 consultations and NEPA are two separate, distinct processes. They can and should occur simultaneously, and documents can be combined, but one is not a substitute for the other. They should, however, be coordinated to avoid duplication of public involvement or other requirements. The information and mitigation gathered as part of the 106 review must be included in the NEPA document, and the 106 process must be completed before a finding of no significant impact (FONSI) or the official record of decision (ROD) can be signed on a proposal that affects historic properties (DOI, 2001a).

If the agency, in consultation with the other consulting parties, determines that the project has the potential to have an adverse impact on historic properties, further consultation must occur to seek ways to avoid, minimize, or mitigate the effects. Therefore, the SHPO will have the opportunity to review and comment on this proposed Fire Management Plan.

The NPS initiated formal consultation on December 15, 2003 with each of the nine SHPOs with jurisdiction on ATPO-managed lands. To date, Connecticut, Massachusetts, New York, New Jersey, and West Virginia SHPOs have concurred with the National Park Service's finding that the proposed action would result in *no adverse affect* to historic and cultural resources. The NPS proposes that, if properly implemented, the fire management plan would provide fire protection necessary meeting the National Park Service's obligations under Section 106, resulting in a determination of *no adverse affect* on any of the park's cultural resources, but the NPS has not yet received concurrence from the Maine, Pennsylvania, Maryland, and Virginia SHPOs.

4.2 LIST OF PREPARERS

National Park Service

- Don Boucher, NPS National Capital Region
- Robert Gray, Park Ranger, Appalachian National Scenic Trail
- Doug Jones, Acadia National Park
- Donald Owen, Appalachian National Scenic Trail
- Robert Proudman, Appalachian Trail Conference
- Casey Reese, Appalachian National Scenic Trail
- Kent Schwarzkopf, Appalachian National Scenic Trail

The Mangi Environmental Group

- Joel Gorder, Environmental Analyst, Project Manager
- Anna Lundin, Environmental Analyst
- Rebecca Whitney, Geographic Information Systems (GIS) Analyst, Project Manager

4.3 SCOPING

Details of the scoping process and the issues that arose from it are described in Chapter 1, Section 1.5 – *Scoping Issues and Impact Topics*.

Persons, Organizations, and Agencies Who Received Scoping Information Regarding the Proposed Actions

NEWSPAPERS

Times-Union; Albany, NY
Morning Call; Allentown, PA
Harlem Valley Times; Amenia, NY
Kennebec Journal; Augusta, ME
Bangor Daily News; Bangor, ME
Clarke Times Courier; Berryville, VA
Bethel Citizen; Bethel, ME
Bethlehem Star; Bethlehem, PA
Press-Enterprise; Bloomsburg, PA
Boyertown Area Times; Boyertown, PA
Maine Times; Brewer, ME
Valley News; Bristol, CT
Carbondale News; Carbondale, PA
Carlisle Sentinel; Carlisle, PA
Putnam Courier-Trader; Carmel, NY
Public Opinion; Chambersburg, PA
Spirit of Jefferson Advocate; Charles Town, WV

Charlottsville/Albermarle Observer; Charlottesville, VA
Independent; Collegeville, PA
Cornwall Local; Cornwall, NY
The Dallas Post; Dallas, PA
Piscataquis Observer; Dover-Foxcroft, ME
Intelligencer-Record; Doylestown, PA
Express Times; Easton, PA
Ephrata Review; Ephrata, PA
Franklin Journal & Farmington Chronicle; Farmington, ME
News & Post; Fredrick, MD
Warren Sentinel; Front Royal, VA
Gettysburg Times; Gettysburg, PA
Independent Republican; Goshen, NY
Echo Pilot; Greencastle, PA
Greenwood Lake & West Milford News; Greenwood Lake, NY
Herald Mail; Hagerstown, MD
Hamburg Item; Hamburg, PA
Evening Sun; Hanover, PA
Patriot-News; Harrisburg, PA
Daily News-Record; Harrisonburg, PA
Waterbury Inquirer; Hartford, CT
Rockland County Times; Haverstraw, NY
Standard-Speaker; Hazleton, PA
Hudson Valley Papers; Highland, NY
News of the Highlands; Highland Falls, NY
Register-Star; Hudson, NY
The Sun; Hummelstown, PA
Huntingdon News; Huntingdon, PA
Kent Good Times Dispatch; Kent, CT
Patriot; Kutztown, PA
Lakeville Journal; Lakeville, CT
Daily News; Lebanon, PA
Loudoun Times-Mirror; Leesburg, VA
Lewiston Sun-Journal; Lewiston, ME
Sentinel; Lewistown, PA
Page News & Courier; Luray, VA
Journal; Martinsburg, WV
Middletown Press; Middletown, CT
Times-Herald Record; Middletown, NY
Press and Journal; Middletown, PA
Mifflinburg Telegraph; Mifflinburg, PA
Pike County Dispatch; Milford, PA
Taconic Newspapers; Millbrook, NY
Katahdin Times; Millinocket, ME
Perry County Times; New Bloomfield, PA
New Hope Gazette; New Hope, PA

Litchfield County Times; New Milford, CT
The New Milford Times; New Milford, CT
The Herald; New Paltz, NY
New Jersey Herald; Newton, NJ
Advance of Bucks County; Newtown, PA
Times Herald; Norristown, PA
The Transcript; North Adams, MA
Daily Hampshire Gazette; Northampton, MA
Pawling News Chronicle; Pawling, NY
The Press-Herald; Pine Grove, PA
Berkshire Eagle; Pittsfield, MA
Tri-State Gazette; Port Jervis, NY
Portland Press Herald; Portland, ME
Pottsville Republican; Pottsville, PA
Poughkeepsie Journal; Poughkeepsie, NY
Reading Times/Eagle; Reading, PA
Roanoke Times; Roanoke, VA
Strasburg Weekly News; Strasburg, PA
Pocono Record; Stroudsburg, PA
Southern Dutchess News; Wappingers Falls, NY
Fauquier Times-Democrat; Warrenton, VA
Warwick Advertiser; Warwick, NY
Orange County Post; Washingtonville, NY
Waterbury Republican-American; Waterbury, CT
Central Maine Morning Sentinel; Waterville, ME
Record-Herald; Waynesboro, PA
News-Virginian; Waynesboro, VA
Winchester Star; Winchester, VA

NATIONAL/STATE/LOCAL AGENCIES

Appalachian Trail Conference
Harpers Ferry, WV

Blue Ridge Parkway
Asheville, NC

Chattahoochee National Forest
Gainesville, GA

Cherokee National Forest
Cleveland, TN

Connecticut DEP
Bureau of Forestry
Hartford, CT

Delaware Forest District
Swiftwater, PA

Delaware Water Gap NRA
Bushkill, PA

George Washington/Jefferson NFs
Roanoke, VA

Great Smokey Mountains NP
Gatlinburg, TN

Green Mountain NF
Rutland, VT

Harpers Ferry NHP
Harpers Ferry, WV

Land Use Regulation Commission
Augusta, ME

Maine Forest Service
Augusta, ME

Maryland DNR
Forest and Park Service
Annapolis, MD

Massachusetts DEM
Bureau of Fire Control
Pittsfield, MA

Michaux Forest District
Fayetteville, PA

National Forests in NC
Asheville, NC

New Jersey DEP
Division of Parks and Forestry
Trenton, NJ

New Jersey Fire Service
Franklin, NJ

New York DEC
Division of Lands and Forests
Albany, NY

Pennsylvania Bureau of Forestry
Harrisburg, PA

Pennsylvania Game Commission
Harrisburg, PA

Shenandoah National Park
Luray, VA

Smithsonian Institution
Front Royal, VA

Virginia Dept of Forestry
Charlottesville, VA

Virginia Dept of Forestry
Woodstock, VA

Walkill River NWR
Sussex, NJ

Weiser Forest District
Cressona, PA

West Virginia Dept of Forestry
Romney, WV

White Mountain National Forest
Laconia, NH

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APPENDIX A

CONSULTATIONS WITH U.S. FISH AND WILDLIFE SERVICE, AND STATE HISTORIC PRESERVATION OFFICES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
6669 Short Lane
Gloucester, VA 23061

March 29, 2004

Mr. Joel Gorder
The Mangi Environmental Group, Inc.
7915 Jones Branch Drive, Suite 2300
McLean, Virginia 22102

Re: Wildland Fire Suppression on the Appalachian Trail from Georgia to Maine, project # see7-3247

Dear Mr. Gorder:

The U.S. Fish and Wildlife Service (FWS) received your January 2, 2004 letter concerning the referenced project. While the Service understands that several field offices responded to you directly, this letter serves as a response for the entire length of the Appalachian Trail (AT), from Georgia to Maine. The following comments are provided under provisions of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

The National Park Service (NPS) proposes to prepare a Fire Management Plan (Plan). This Plan is limited to reactive wildland fire suppression activities and does not include preventive activities. Preventive activities would require separate ESA consultation with the appropriate FWS field office.

In addition to your January 2, 2004 letter, you provided additional project clarification in your February 11 and 18, 2004 electronic mails. You provided documentation of surveys along the AT in each of the states. Your electronic mails also indicated that when NPS has discretion, they will use that discretion to avoid impacts to federally listed species. You listed eight species that could be affected by your proposed action. The Service believes there are 11 such species, and they are as follows:

Clemmys muhlenbergii	bog turtle	threatened
Geum radiatum	spreading avens	endangered
Glaucomys sabrinus coloratus	Carolina northern flying squirrel	endangered
Glaucomys sabrinus fuscus	Virginia northern flying squirrel	endangered
Gymnoderma lineare	rock gnome lichen	endangered
Haliaeetus leucocephalus	bald eagle	threatended
Hedyotis purpurea var. *montana*	Roan Mountain bluet	endangered
Isotria medeoloides	small whorled pogonia	endangered
Myotis sodalis	Indiana bat	endangered

Mr. Gorder Page 2

Plethodon shenandoah	Shenandoah salamander	endangered
Potentilla robbinsiana	Robbins' cinquefoil	endangered

In New Jersey, bog turtle habitat crosses the AT, and nearby there is a winter roosting area for the bald eagle. The Indiana bat and the small whorled pogonia may occur in the AT corridor from Virginia north. Some of the surveys are approximately 10 years old, and the Service recommends updating old surveys. NPS has an on-going responsibility to update surveys of federally listed species periodically. Since NPS has committed to maintain up-to-date species information and use that information to avoid impacts to federally listed species, FWS concurs that NPS's discretionary wildland fire response activities are not likely to adversely affect federally listed species.

The FWS would like to emphasize that fighting wildland fire should not be delayed by endangered species consultation. If for any reason, NPS must deviate from the proposed project description, and impact avoidance is not possible, the Service's emergency consultation procedures dictate that NPS should use its existing information to minimize any possible impacts while fighting the fire, and then contact the Service as soon as practicable for additional guidance. NPS will need to document what occurred to assist with the emergency consultation.

If you have any questions, please contact Mr. Eric Davis at (804) 693-6694, extension 104.

Sincerely,

Karen L. Mayne

Karen L. Mayne
Supervisor
Virginia Field Office

cc: FWS, R4, ES, Atlanta, GA (Ken Graham)
FWS, R5, ES, Hadley, MA (Glenn Smith)

STATE OF CONNECTICUT

State Historic Preservation Office

Commission on Arts, Tourism, Culture, History and Film

December 17, 2003

Mr. Joel Gorder
Mangi Environmental Group Inc.
7915 Jones Branch Drive
McLean, VA 22102

Subject: Appalachian National Scenic Trail

Dear Mr. Gorder:

The State Historic Preservation Office understands that the Mangi Environmental Group Inc. will be preparing a Fire Management Plan and Environment Assessment, on behalf of the National Park Service, regarding the Appalachian National Scenic Trail. In addition, this office notes that the National Park Service and the Office of the State Archaeologist at the University of Connecticut (Storrs) have undertaken a historic and archaeological assessment of the Connecticut section of the Appalachian Trail and that the under-preparation assessment report will be submitted to our professional staff in the near future.

The State Historic Preservation Office concurs with Mangi Environmental Group Inc.'s evaluation that fire suppression would constitute a potential adverse effects upon Connecticut's historic and archaeological heritage. However, this office further agrees with the Mangi Environmental Group Inc. that the preferred fire suppression tactics and associated mitigative measures represent a reasonable approach vis-a-vis the proposed Fire Management Plan. This comment is conditional upon the National Park Service's incorporation of the forthcoming historic and archaeological assessment data as an integral component of the proposed Fire Management Plan within the State of Connecticut.

This office appreciates the opportunity to have reviewed and commented upon the proposed undertaking.

For further assistance please contact Dr. David A. Poirier, Staff Archaeologist.

Sincerely,

J. Paul Loether
Deputy State Historic
Preservation Officer

cc: Dr. Nicholas Bellantoni/OSA

59 SOUTH PROSPECT STREET HARTFORD, CONNECTICUT 06106-1901
Telephone: 860-566-3005 Facsimile: 860-566-5078

AN EQUAL OPPORTUNITY EMPLOYER

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

December 30, 2003

Joel Gorder
Mangi Environmental Group
7915 Jones Branch Drive
McLean, VA 22102

Re: 03PR05993
Appalachian Trail Fire Mgmt. Plan
NPS
Multiple counties

Dear Mr. Gorder:

Thank you for requesting our comments on the National Park Service's Appalachian Trail Fire Management Plan and its impact on historic and cultural resources under Section 106 of the National Historic Preservation Act.

The Appalachian National Scenic Trail, begun in the 1920s and completed in 1937 appears to meet the criteria for listing on the National Register of Historic Places for its significance in the history of wilderness recreation, and landscape design. Additionally, the trail includes, or is located to adjacent historic and archaeological features unrelated to the trail's context. Although these elements have not been systematically identified to date, many have been listed on the National Register or are likely to meet the criteria for listing.

Based on the information you have provided, the Fire Management Plan is limited to the suppression of fires on federal lands and/or areas managed by the Appalachian Trail Park Office. The affected areas in our state are not identified in your submission. Nevertheless, the fire suppression strategies included in the plan emphasize minimizing damage to historic and cultural resources. We concur with this approach and believe that the plan, as described in your letter, poses no adverse effect to historic and cultural resources associated with or located in proximity to the Appalachian Trail. Please feel free to call on me at 518-237-8643 ext. 3258 if you have any questions or require further assistance.

Sincerely,

Mark L. Peckham
National Register
Program Coordinator

WEST VIRGINIA DIVISION OF
CULTURE AND HISTORY

July 1, 2004

Mr. Joel Gorder
The Mangi Environmental Group, Inc.
7915 Jones Branch Drive
McLean, VA 22102

RE: Fire Management Plan
FR#: 04-170-MULTI

Dear Mr. Gorder:

We have reviewed the letter submitted for the above mentioned project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties", we submit our comments.

It is our understanding that you are initiating consultation on behalf of the National Park Service in the preparation of a fire management plan (FMP) and its associated Environmental Assessment for the Appalachian National Scenic Trail. At this time, the plan is intended to be reactive. Should future need arise for a prescribed fire application or wildland urban interface projects, we understand that these projects will be submitted for review on a case-by-case basis. We concur with this.

We understand that the FMP will recommend the use of suppression tactics to minimize impacts to important archaeological sites and other cultural resources. We appreciate the attention being given to significant cultural resources. We also agree that the preferred suppression tactics mentioned in the letter should help to mitigate any adverse affects caused to significant cultural resources as a result of fire suppression activities.

Should you wish to discuss aspects of the FMP as it develops, please contact Jennifer Murdock, Structural Historian, to discuss architectural elements or me to discuss questions of an archaeological nature. We look forward to receiving and reviewing the final management plan.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact me at (304) 558-0240 extension 711.*

Sincerely,

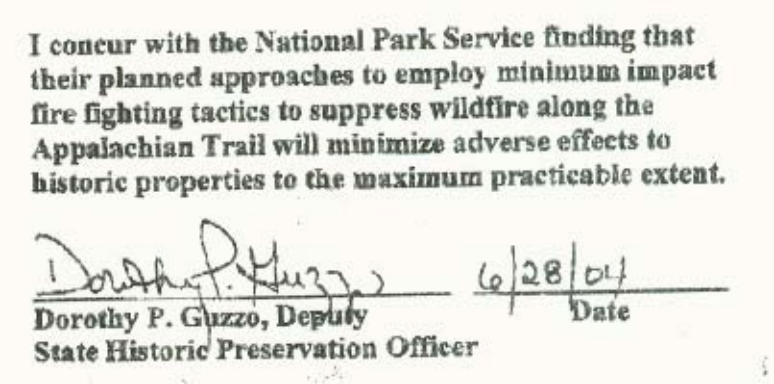
Lora A. Lamarre
Archaeologist

THE CULTURAL CENTER • 1900 KANAWHA BOULEVARD, EAST • CHARLESTON, WEST VIRGINIA 25305-0300
TELEPHONE 304-558-0220 • FAX 304-558-2779 • TDD 304-558-3562
EEO/AA EMPLOYER

From Massachusetts SHPO:


CONCURRENCE: Brona Simon
1/16/04 BRONA SIMON
DEPUTY STATE HISTORIC
PRESERVATION OFFICER
MASSACHUSETTS
HISTORICAL COMMISSION

From New Jersey SHPO:


I concur with the National Park Service finding that their planned approaches to employ minimum impact fire fighting tactics to suppress wildfire along the Appalachian Trail will minimize adverse effects to historic properties to the maximum practicable extent.

Dorothy P. Guzzo 6/28/04
Dorothy P. Guzzo, Deputy Date
State Historic Preservation Officer

APPENDIX B

STRUCTURES AND COMPONENTS OF THE APPALACHIAN TRAIL

The following 1,290 individually named components of the Appalachian Trail's current built environment appear in the most recent editions of Appalachian Trail guidebooks. These properties include shelters, viewpoints, improved roads, bridges, impoundments, buildings, monuments, towers, and railroad grades. The guidebooks represent primary sources of information consulted by most trail users. Resources already mentioned in this report, trails, campsites, trail heads, parking areas, and unnamed roads, rail grades, fences, walls, quarries, kilns, springs, and other features are not included in these lists. Presented from south to north, in the direction followed by most thru-hikers, these include:

Georgia [26 named properties]
(Coriell, et al. 2000; Gove 2000)

Springer Mountain Bronze Plaques (1959 and 1993)
Springer Mountain Shelter (1993)
Springer Mountain Viewpoint
Stover Creek Shelter
Hickory Flats Cemetery
Hawk Mountain Shelter
Gooch Gap Shelter
GA 60
Blood Mountain Viewpoint
Blood Mountain CCC Shelter (1930s)
Bryson Reece Memorial
US 19/US 129
Levelland Mountain Viewpoint
Richard B. Russell Scenic Highway/GA 348
Whitley Gap Shelter
Low Gap Shelter
Blue Mountain Shelter (1988)
GA 75
Hogpen Gap Plaque
Cherokee Nation Boundary
Rocky Mountain Viewpoint
Cheese Factory Site (1840s)
Tray Mountain Shelter
Deep Gap Shelter
US 76
Plumachord Gap Shelter

North Carolina and Tennessee
[187 named properties] (Coriell, et al. 2000; Edgar 2001;Gove 1998)

Bly Gap Viewpoint
Courthouse Bald Viewpoint
Ravenrock Cliff Viewpoint
Muskrat Creek Shelter
Standing Indian Shelter
Standing Indian Mountain Viewpoint
Carter Gap Shelter (1998)
Albert Mountain Fire Tower
Albert Mountain Viewpoint
Big Spring Gap Shelter
Rock Gap Shelter
Old US 64
US 64
Siler Bald Viewpoint
NC 1310
Wilson Lick Ranger Station
Wayah Bald Observation Tower
John B. Byrne Viewpoint
Cold Spring Shelter
Cooper Ridge Bald Viewpoint
Rocky Bald Lookout
NC 1365
Wesser Bald Fire Tower
Wesser Bald Shelter (1994)
Jumpup Viewpoint
A. Rufus Morgan Shelter
US 19
Sassafras Gap Shelter
NC 143
Brown Fork Gap Shelter (1997)
Yellow Creek Mountain Road/NC 1242
Cable Gap Shelter
High Top Ridge Viewpoint
Fontana Lake
NC 28
Fontana Dam Shelter
Fontana Dam
Fontana Dam Visitors Center
Abandoned NC 228
Shuckstack Mountain Viewpoint
Shuckstack Mountain Fire Tower
Birch Spring Shelter

Devil's Tater Patch Viewpoint
Ekaneetlee Gap Road
Mollies Ridge Shelter
Russell Field Shelter
Spence Field Shelter
Derrick Knob Shelter/Herders Cabin site
Silers Bald Shelter
Silers Bald Viewpoint
Double Spring Gap Shelter
Mount Buckley Viewpoint
Clingmans Dome Viewpoint
Clingmans Dome Observation Tower
Jenkins Ridge Viewpoint
Rocky Top Viewpoint
Thunderhead Mountain Viewpoint
Mount Collins Shelter
US 441
Icewater Spring Shelter
1925 Logging Fire Area
Charlies Bunion Viewpoint
Bradley's View
Pecks Corner Shelter
Jesuit Residence Hiker Hostel
Carolina Mountain Club Bronze Plaque
NC 209
Southern Railroad Station
Hot Springs Historical Area
Lovers Leap Viewpoint
Mill Ridge Viewpoint
US 25/US 70
Nantahala Outdoor Center
US 25/US 70 Overpass
Old US 25/US 70
Rich Mountain Viewpoint
Rich Mountain Fire Tower
Rex Pulford Memorial Stone
Spring Mountain CCC Shelter (1938)
TN 70
Old Hayesville Road
Little Laurel Stone Shelter (rebuilt 1967)
Camp Creek Bald Viewpoint
Blackstack Cliffs Viewpoint
Jerry Cabin Stone Shelter (1968)
Coldspring Mountain Viewpoint
Big Rock Viewpoint
Howard E. Bassett Memorial Stone
Shelton Gravestones (1915)
Flint Gap Logging Railroad Grade
Flint Mountain Shelter (rebuilt 1988)
Locust Ridge Shelter site (removed 1982)
NC 212/TN 352
Boone Cove Road
Cemetery
Mount Sequoyah Viewpoint
Tricorner Knob Shelter
Hell Ridge Forest Fire Area
Deer Creek Gap Viewpoint
Cosby Knob Shelter
CCC Construction Camp site
Mount Cammerer Stone Tower
Davenport Gap Shelter
NC 284/TN 32
Browns Bridge
I-40
Waterville School Road
Snowbird Mountain Viewpoint
Snowbird Mountain FAA Tower
Groundhog Creek Shelter
Max Patch Road/NC 1182
Max Patch Viewpoint and USGS Marker (1933)
Roaring Fork Shelter
NC 1182/TN 107
Deer Park Mountain CCC Shelter (1938)
Gravestones
Hogback Ridge Shelter
Cemetery Gate
US 23/I-26
Talc Mine site
Greer House site (1800s)
Big Bald Viewpoint
Bald Mountain Shelter (1988)
US 19W
No Business Knob Concrete Block Shelter (1963)
Temple Hill Fire Tower site
Chestoa Bridge
Southern Railroad Tracks
Nolichucky Gorge Hikers Hostel
Curley Maple Gap Concrete Block Shelter (1961)
Indian Grave Gap Road/TN 395/NC 197
Beauty Spot Gap Viewpoint
Cherry Gap Concrete Block Shelter (1962)
NC 226
Iron Mountain Gap Road
Clyde Smith Shelter (1977)
Little Rock Knob Viewpoint
Hughes Gap Road
Beartown Mountain Viewpoint
Fire Warden Cabin site (removed 1980)
Cloudland Hotel Site
Cloudland Viewpoint
Roan High Knob Shelter
Carvers Gap Viewpoint
NC 261/TN 143

Engine Gap Abandoned Sawmill Engine
Jane Bald Viewpoint
Stan Murray Shelter (1977)
Overmountain Shelter
Yellow Mountain Gap Viewpoint
Stan Murray Memorial Plaque
Wilder Mine Hollow (1880-1920)
Apple House Shelter
US 19E
Bear Branch Bridge
Isaacs Cemetery
Jones Branch Plank Bridge
Campbell Hollow Road
Dan Nelan Shelter site (1981-1990)
Moonshine Still Ruins
Watauga Dam (1949)
Watauga Dam Visitor Center
Watauga Dam Road
Vandeventer Shelter (1961)
Iron Mountain Shelter (1960)
Nick Grindstaff Grave and Monument
TN 91
Walnut Mountain Road
Moreland Gap Concrete Block Shelter (1960)
White Rocks Mountain Fire Tower
White Rocks Mountain Viewpoint
Buck Mountain Road
Laurel Fork Log Bridge
Dennis Cove Road
Laurel Fork Shelter (1966)
Shook Branch Road
Shook Branch Recreation Area
US 321
Watauga Lake
Watauga Lake Shelter (1980)

Double Springs Road
Double Springs Shelter (1960)
Shady Valley Road
US 421
McQueens Knob Log Shelter (1934)
Abingdon Gap Shelter (1959)

Virginia [282 named properties]
(Ellinwood 2001; Lanning 2000; Lillard and Hicks 1998; Shaeffer 1999; Vaughan 1998)

Town of Damascus
US 58/VA 91
Saunders Viewpoint
Bear Tree Gap Viewpoint
Straight Branch Footbridge
Saunders Shelter (1987)
VA 728
Creek Junction Railroad Station
VA 859
VA 58
Luther Hassinger Bridge
Lost Mountain Shelter (1994)
VA 601
Buzzard Rock Viewpoint
Whitetop Mountain Road
VA 600
Thomas Knob Shelter
Rhododendron Gap Viewpoint
Fatman Squeeze Tunnel
The Scales (Split-Rail Corral Cattle Weighing and Loading Point)
Old Orchard Shelter
Wise Shelter (1996)
VA 603
VA 650/VA 16
Raccoon Branch Shelter
High Point Viewpoint
Trimpi Shelter (rebuilt 1990)
USGS Marker
Old Farm site
VA 672
South Fork of the Holston Footbridge
VA 670
VA 601
Slabtown Manganese Pit Mine (1940s)
Partnership Shelter (1997)
VA 16
VA 622
Brushy Mountain Viewpoint
Brushy Mountain USGS Marker (1934)
Louise Chatfield Shelter
VA 615
Lindamond School
Phillippi Branch Footbridge
VA 729
Middle Fork of the Holston River Footbridge
VA 683/US 11
I-81
Dry Run Bridge
Davis Fancy (ca. 1748) Settlement Marker
Davis Family Cemetery

VA 617
Davis Path Shelter
VA 610
North Fork of the Holston River Bridge
VA 742
Tilson's Mill (1861)
VA 42
Knot Maul Branch Shelter
Lick Creek Footbridge
VA 612
I-77 Bridge
Helvey's Mill Shelter
VA 611
Jenny Knob Shelter
VA 608
Kimberling Creek Suspension Bridge
VA 606
Wapiti Shelter (1980)
Sugar Run Road
Doc's Knob Shelter (1971)
Wilburn Valley Viewpoint
View Rock at Angels Rest
(vista of Pearisburg Historic District)
VA 634
Stump Street
VA 100
Captain George Pearis Gravesite
Senator Shumate Bridge
US 460
Stillhouse Branch Road/VA 641
Rice Field Shelter (1996)
Symms Gap Meadow (the Rice Field)
Dickinson Gap Stone Boundary Marker
Pearisburg Overlooks
Pine Swamp Branch Shelter
VA 635
Bailey Gap Shelter (1960s)
VA 734
Salt Sulphur Turnpike/VA 613
Wind Rock Viewpoint
War Spur Shelter (1960s)
Johns Creek Bridge
VA 601
Former Fire Tower site
White Rock Viewpoint
Kelly Knob Viewpoint
Laurel Creek Shelter (moved to present
location 1988)
VA 42
VA 630
Sarver Cabin (2001)
Old Cemetery (1800s)
Niday Shelter (moved to present location
Chestnut Knob Shelter (rebuilt 1994)
Chestnut Knob Viewpoint
Garden Mountain Viewpoints
(Vista of Burke's Garden Historic District)
VA 623
Jenkins Shelter
Laurel Creek Footbridge
VA 615
US 21/52
1980)
VA 621
Craig Creek Bridge
Audie Murphy Monument
VA 620
Trout Creek Footbridge
Pickle Branch Shelter (moved to present
location 1980).
Dragon's Tooth Viewpoint
Rawie's Rest Viewpoint
VA 624
VA 785
VA 311
VA 864
Metal Boy Scout Shelter
Catawba Mountain Shelter (1984)
McAfee Knob Viewpoint
Campbell Shelter (1989)
Lambert Meadow Shelter (1974)
Tinker Creek Concrete Bridge
VA 816
US 220/I-81
VA 779
US 11 Footbridge
Norfolk and Southern Railroad Tracks
VA 652
Fullhardt Knob Shelter (1960s)
Salt Pond Road
Wilson Creek Shelter
Old Fincastle Road
Blue Knob Viewpoint (1986)
Milepost 97.7 Blue Ridge Parkway
Taylors Mountain Overlook
Montvale Overlook
Harvey's Knob Overlook
Bobblet's Gap Shelter (1961)
Peaks of Otter Overlook
VA 43/695
Cove Mountain Shelter (1981)
Purgatory Mountain Viewpoint
VA 614
Bryant Ridge Shelter (1992)
VA 714
Cornelius Creek Shelter (1960)

Thunder Hill Shelter (1962)
Thunder Ridge Overlook
Matts Creek Shelter (1961)
Blue Ridge Canal (1828-1881)
Southern Railroad Tracks
James River Bill Foot Memorial Footbridge
VA 130/US 501/Snowden Bridge
Lower Rocky Row Run Bridge
Upper Rocky Row Run Bridge
Hercules Road/VA 812
Johns Hollow Shelter (1961)
Big Rocky Row Viewpoint
Ottie Kline Powell Memorial
Fire Tower site
Punchbowl Shelter (1961)
Pedlar Dam Footbridge
Pedlar Lake Road
Lynchburg Reservoir
Brown Mountain Creek Bridge
Brown Mountain Creek Trail Shelter (1961)
Brown Mountain Creek Settlement Ruins (Fl. 1868-1918)
US 60
12 Mile Stone Wall (1800s)
Cold Mountain Viewpoint
Navy Fighter Crash Site (1978)
Tar Jacket Ridge Viewpoint
Seeley-Woodworth Shelter (1984)
Porters Field exploration site (1749)
Porters Ridge Viewpoint
Fish Hatchery Road
Cash Hollow Road
Crabtree Farm Road/VA 826
The Priest Shelter (1960)
The Priest Summit Viewpoint (1751-present)
VA 56
Harpers Creek Shelter (1961)
Hanging Rock Viewpoint
Three Ridges Viewpoint
Bee Mountain Viewpoint
Maupin Field Shelter
Meadow Mountain Viewpoint
VA 664
Humpback Mountain Viewpoint
Humpback Rocks Viewpoint
C. Paul Wolfe Shelter (1991)
US 250/I-64/Rockfish Gap
Range View Cabin
Keyser Run Fire Road
Browntown-Harris Hollow Road
Gravel Springs Hut
North Marshall Viewpoint
Petite Gap Road
Henry Lanum Footbridge
Bear Den Mountain Viewpoint
Calf Mountain Shelter
Ivy Creek Overlook
Doyles River Overlook
Riprap Overlook
Sawmill Run Overlook
Calf Mountain Overlook
Fishers Gap Overlook
Franklin Cliffs Overlook
Spitler Knoll Overlook
Old Rag Mountain Overlook
Jewell Hollow Overlook
Hogback Overlook
Little Hogback Overlook
Bucks Elbow Mountain Fire Road
South Fork Moorman's River Fire Road
North Fork Moorman's River Fire Road
Blackrock Hut
Blackrock Viewpoint
Dundo Developed Area
Madison Run Fire Road
Loft Mountain Camp Store
Pinefield Hut
Simmons Gap Fire Road
Smith Roach Gap Fire Road
Hightop Hut
US 33 Bridge
South River Fire Road
CCC Camp site
Pocosin Cabin
Pocosin Fire Road
Bearfence Hut
Bearfence Mountain Viewpoint
Conway River Fire Road
Tanners Ridge Road
Tanners Ridge Cemetery
Black Rock Viewpoint
Rock Spring Cabin and Hut
Red Gate Fire Road
Skyland Road
Shaver Hollow Shelter site
Pinnacles Picnic Area
Panorama Restaurant
US 211
Pass Mountain Shelter
Beahms Gap Overlook
Compton Peak Viewpoint
Compton Gap-Chester Gap Road
Springhouse Road
Northern Virginia 4-Hl Center
VA 602

National Zoological Park Research and Conservation Center (former USDA Livestock Research Station, US Cavalry Remount Station, and P.O.W. Camp)
Sloan Creek Footbridge
US 522
Denton Shelter
VA 638
Trumbo Hollow Viewpoint
VA 55/VA 725
I-66 Underpass
Manassas Gap Shelter
Dick's Dome Shelter
Signal Knob (1861-1865)
US 50
Myron Glaser Cabin
Rod Hollow Shelter
Morgan Mill Stream Footbridge
VA 605
Sam Moore Shelter
Lookout Point
Bears Den Hostel
VA 7
VA 679
Crescent Rock Viewpoint
Blackburn Trail Center
Quartzite Cliff Viewpoint
Shannondale Road
Buzzard Rocks Viewpoint
David Lesser Shelter

West Virginia [4 named properties]
(Lillard and Hicks 1998; Lanning 2000)

WV 9
Loudon Heights Viewpoint
WV 32
US 340 Shenandoah River Bridge

Maryland [49 named properties]
(Lanning 2000; Scherer and Hopey 1998)

Goodloe E. Byron Memorial Footbridge
C & O Canal Towpath (1850-1924)
C & O Canal Lock
Sandy Hook Bridge
C & O Canal Lift Lock No. 31
Lock Tenders House
CSX Railroad Tracks
Keep Tryst Road
Washington County Railroad Grade
US 340 Underpass
Weverton Road
Goodloe E. Byron Plaque
Weverton Cliffs Overlook
Brownsville Gap Road
Glenn R. Caveney Wilderness Memorial Plaque
Crampton Gap Civil War Earthworks
Civil War Correspondents Memorial
Gathland Estate
Gapland Road/MD 572
South Mountain Battlefield
Stone Barn ruins (ca. 1887)
Crampton Gap CCC Shelter (1941)
White Rocks Viewpoint
Lambs Knoll Summit Communications Towers
Rocky Run CCC Shelter (1940-1941)
Reno Monument (1998)
Reno Monument Road
Dahlgren Stone Gothic Chapel
South Mountain Inn (ca. 1800)
US Alt. 40
Washington Monument Road
Boonsboro Mountain Road
US 40/I-70 Overpass
Pine Knob Shelter
Annapolis Rocks Viewpoint
Black Rock Viewpoint
Black Rock Hotel Site
Bagtown Road
Wolfsville Road/MD 17
Ensign Phillip Cowall Memorial Shelter
Foxville Road/MD 77
Warner Gap Road
Raven Rock Road/MD 491

Devils Racecourse Shelter
High Rock Viewpoint, Hang Glider, and Pavilion site
High Rock Road
Pen Mar Park (1877-1943)
Mason-Dixon Line (1765)
Pen Mar Road

Pennsylvania [198 named properties]
(Gross 1998; Scherer and Hopey 1998)

Falls Creek Footbridge
Old PA 16
Red Run Log Bridge
PA 16
Mentzler Gap Road
Deer Lick Shelters
Antietam Shelter
Old Forge Picnic Grounds
Rattlesnake Run Road
Old Forge Road
Tumbling Run Shelters
Chimney Rocks Viewpoint
Snowy Mountain Fire Tower
Snowy Mountain Road
Swamp Road
PA 233
Rocky Mountain Shelters
US 30
Caledonia State Park (1837 iron forge Reconstructed 1927)
Conococheague Creek Footbridge
Greenwood Furnace Road
Quarry Gap Road
Locked Antlers Hunting Camp site
Quarry Gap CCC Shelters (ca. 1935)
Stillhouse Road
Middle Ridge Road
Means Hollow Road
Milesburn CCC Cabin (ca. 1935)
Milesburn Road
Sheet Iron Road
Old Town Road
Rocky Ridge Summit Viewpoint
Whiskey Spring Road
Alec Kennedy Shelter
Leideigh Road
Carlisle Iron Works ruins
Yellow Breeches Creek Stone Arch Bridge
ATC Mid-Atlantic Regional Office
PA 174
York Road/PA 74
Lisburn Road
Ridge Road
Fegley Hollow Road
Birch Run CCC Shelters (ca. 1935)
Arendtsville-Shippensburg Road
Dead Woman Hollow Road
Anna Michener Memorial Cabin
Woodrow Road
Toms Run Shelters
Michaux Road/High Mountain Road
Old Barn Foundation
Camp Michaux (CCC Camp and WW II POW Camp)
Camp Michaux Plaque
Toms Run Footbridge
Old Shippenburg Road
PA 233
Bendersville Road
Ironmaster's Mansion
Pine Grove Furnace ruins (1762-1915)
Fuller Lake Iron Furnace
Fuller Lake (Open Pit Ore Quarry)
Mountain Creek Footbridge
AT Midpoint Marker
Old Forge Road
Lime Kiln Road
Tagg Run Shelters
Hunters Run Road
PA 34
Green Mountain General Store
PA 94
Byers Road
Trindle Road/PA 641
Ridge Road
Old Stonehouse Road
Appalachian Drive
Pennsylvania Turnpike/I-76 Overpass
US 11 Footbridge
I-81 Overpass
Bernhisel Road
Bernhisel Bridge
Scott Farm Trail Work Center
Sherwood Drive

PA 944
Darlington Shelter (1977)
Millers Gap Bridge
PA 850
Duncannon Water Company Service Road
Thelma Marks Memorial Shelter (1960)
Shermans Creek Bridge
PA 274/US 11/15
City of Duncannon
Newport Road/PA 849
Juniata River Bridge
Clarks Ferry Bridge
Berkeheimer Farm Ruins (ca. 1920s)
Susquehanna River Viewpoint
Clarks Ferry Shelter
Bailey USGS Marker
Bell Microwave Tower Access Road
PA 255
PA 255 Viewpoint
Pennsylvania Fish Commission Radio Tower
Zeager Overlook
Fumitory Rocks Viewpoint
Table Rock Viewpoint
Peters Mountain Shelter (1993)
Shikellimy Rocks Viewpoint
PA 325
Stony Mountain Fire Tower site
Horseshoe Trail Monument Stone
Yellow Springs Village Ruins
Rausch Gap Shelter (1972)
Susquehanna and Schuylkill Railroad Grade (-1940s)
Rausch Creek Stone Arch Railroad Bridge
Pine Swamp Road
Eckville Shelter
Dan's Pulpit Viewpoint
Tri-County Corner Marker Cairn (1st AT Section blazes, 1926)
Old Dresher Road
Allentown Shelter
East Franklin Road/Jacksonville-Snyders Road
Blue Mountain Summit
PA 309
The Cliffs Viewpoint
Bear Rocks Viewpoint
Bake Oven Knob Road
Bake Oven Knob Viewpoint
Bake Oven Knob Shelter
Ashfield Road
Lehigh Furnace Gap Road
NE Extension PA Turnpike/PA 9
Rausch Gap Village Ruins (1850s)
Haystack Creek Footbridge
Ridge Road
PA 443
PA 72
I-81
Tri-County Marker
William Penn Shelter
PA 645
Fisher Lookout
Kimmel Lookout Tower
PA 501
501 Shelter
Pilger Ruh Spring (1700s)
William F. Shanaman Marker
Shikellamy Summit
Shuberts Summit Road
Fort Dietrich Snyder (1756) Marker
PA 183
Rentschler Memorial Marker
Eagles Nest Shelter
Auburn Lookout
Dynamite Road
Blue Mountain and Reading Railroad Tracks
Port Clinton
Broad Street
Schuylkill River Railroad Bridge
PA 61 Underpass
Hamburg Reservoir
Windsor Furnace Ruins
Windsor Furnace Road
Windsor Furnace Shelter
Pulpit Rock Viewpoint
The Pinnacle Viewpoint
Devil's Pulpit Viewpoint
George W. Outerbridge Shelter
PA 873 Bridge
PA 248
Palmerton Superfund Site
Little Gap Road/PA 4001
Weathering Knob Viewpoint
Goose Knob Viewpoint
Smith Gap Road
Leroy A. Smith Shelter (1972)
Power Line Viewpoint
Pipeline Viewpoint
Hahn's Lookout
Lookout Rocks
PA 33 Underpass
Saylorsburg-Wind Gap Road
Blue Mountain Water Company Road
Wolf Rocks Viewpoint
Power Line Viewpoint

Cherry Valley Road
PA 191
Kirkridge Shelter
Lunch Rocks Viewpoint
Mount Minsi Viewpoint Lookout Rock
Council Rock Viewpoint
Lookout Rock Viewpoint
Winona Cliff Viewpoint
Lake Lenape
Lake Road
Village of Delaware Water Gap
Delaware Street
PA 611
I-80 Bridge

New Jersey [37 named properties]
(Chazin 1998; Scherer and Hopey 1998)

Rte. 519
Courtright Road
Ferguson Road
Gemmer Road
Goodrich Road
Wolf Pit Hill Viewpoint
Goldsmith Road
Unionville Road/Rte. 651
Quarry Road
Lott Road
NJ 284/NY 284
Lower Road
Carnegie Road
Standard Oil Pipeline Site (1880s)
Walkill River Bridge
Oil City Road
Wawayanda Hilton
Parker Pond
Pullis Hotel Site
Warwick Turnpike
Lehigh and New England Railroad Grade (1888-1961)
Liberty Corner Road/Walkill Road
Pochuck Shelter
Pochuck Mountain Viewpoint
Great Stone Wall of Pochuck
Banks Pond Road
Glenwood School (1864-1958)
Rt. 565
Rt. 517
Canal Road Bridge
Lehigh and Hudson River Railroad (1882)
NJ 94
Stairway to Heaven
Iron Mountain Road
Wawayanda Road
Longhouse Road/Brady Road
Surprise Lake
Bearfort Mountain Summit Viewpoint

New York [107 named properties]
(Chazin 1998; Scherer and Hopey 1998)

Prospect Rock Viewpoint
Bearfort Ridge Viewpoint
Continental Road
NY 17A
Eastern Pinnacles Viewpoint
Cat Rocks Viewpoint
Wildcat Shelter (1992)
Lakes Road (Monroe Road)
Mombasha High Point Viewpoint
West Mombasha Road
Peter Buck Plaque
Buchanan Mountain Viewpoints
East Mombasha Road
Little Dam Lake Inlet Wood Truss Bridge
Little Dam Lake
Orange Turnpike
Rock Ledges Viewpoint
Agony Grind Viewpoint
NY 17
Metro North Railroad Tracks
Arden Valley Road
Arden Valley Road Bridge
New York Thruway/I-87
Elk Pen
Green Pond Mountain Road
Island Pond
Crooked Road
Long Path
Surebridge Mine Road
Greenwood Mine
Fingerboard Shelter (1928)
Seven Lakes Drive
Lake Tiorati
Tiorati Circle
William Brien Memorial CCC Shelter (1933)
Black Mountain Viewpoint
1779 Historic Trail
Taconic State Parkway
Miller Hill Road
Rock Ledge Road
Hosner Mountain Vista
Hosner Mountain Road
NY 52
Stormville Mountain Road
Mountain Top Road
I-84 Overpass
Grape Hollow Road
Mount Egbert Viewpoint and USGS Marker
Palisades Interstate Parkway
West Mountain Shelter (1938)
West Mountain Viewpoint
1777 Historic Trail
Perkins Tower
Bear Mountain Summit Viewpoint
Joseph Bartha Plaque
Bear Mountain Inn
Hessian Lake
US 9W
Bear Mountain Trailside Museum and Zoo
Walt Whitman Statue
US 6
NY 9D
Anthony's Nose Viewpoint
Manitou Road
US 9/NY 403
Highland Turnpike
Graymoor Monastery
Old West Point Road
Little Fort Hill Ruins (ca. 1777)
Storm King Vista
Denning Hill Viewpoint
Old Albany Post Road
Canopus Hill Viewpoint
Canopus Hill Road (Philipse Brook Road)
South Highland Road
Dennytown Road
Dennytown Stone Buildings (1920s)
Sunk Mine Road
Sunk Mine Narrow-Gauge Railroad Bed (1874)
NY 301
Canopus Lake Viewpoint
Looking Mountain Viewpoint
Long Hill Road
RPH Shelter
Hortontown Road
Morgan Stewart Shelter (1984)
Depot Hill Road
Whaley Lake Stream Bridge
Old NY 55
NY 55
Nuclear Lake (-1972)
Penny Road
Cat Rocks Viewpoint
Telephone Pioneers Shelter (1988)
West Dover Road/Rt. 20
Corbin Hill Viewpoint

Swamp River Bridge
Metro-North AT Railroad Station
NY 22
Hurd's Corner Road/Old NY 22
Hurd's Corner Water Tower (ca. 1920)
Gates of Heaven Cemetery
Leather Hill Road
Wiley (Webatuck) Shelter (1940)
Hoag Cemetery
Duell Hollow Road
Hoyt Road

Connecticut [53 named properties]
(Emblidge 1998; Sills, et al. 2000)

Hoyt Road
CT 55
Ten Mile River Lean-to (1996)
Ned Anderson Memorial Footbridge
Bull's Bridge Road and Dam
Schaghticoke Road
Schaghticoke Indian Reservation
Indian Rocks Viewpoint
Mount Algo Lean-to (1986)
CT 341
Macedonia Brook Log Bridge
Skiff Mountain Road
Housatonic Valley Overlooks
River Road
North Kent Bridge Site (destroyed 1936)
Stewart Hollow Brook Lean-to
Swift Bridge Site (destroyed 1936)
Dawn Hill Road
Liner Farm Meadow
CT 4
Old Sharon Road #2
US 7
Pine Knob Lookout
Caesar Road
Surdan Mountain Road
Ball Brook Footbridge
Brassie Brook Lean-to (1980)
Carse Brook Log Bridge
West Cornwall Road
Pine Swamp Brook Shelter (1989)
Mount Easter Viewpoint
Sharon Mountain Road
Sharon Mountain Hang Glider Ramp
Belter's Bump Viewpoint
CT 112/US 7
Housatonic Valley Regional High School
Housatonic Railroad Tracks (1836-present)
Warren Turnpike
Hydroelectric Power Plant & 1851 Canal
Iron Bridge (1870)
Housatonic River Road
Mount Prospect Viewpoint
Rand's View
Billy's View
Central New England Railroad Grade (1872-1966)
US 44
Town of Salisbury
Lower Cobble Road
CT 41
Charcoal Woodcutters Road
Riga Lean-to (1990)
Charcoal Woodcutters Road
Bear Mountain Stone Cairn

Massachusetts [81 named properties]
(Emblidge 1998; Sills, et al. 2000)

Bear Rock Falls Viewpoint
Plantain Pond Road
Mount Everett Fire Tower
Summit Road
Guilder Pond
Glen Brook Lean-to
Jug End Viewpoint
Jug End Road (Curtis Road)
April Hill Farm (1742)
MA 41
Hubbard Brook Bridge
South Egremont Road
Shay's Rebellion (1798) Monument
West Sheffield Road
Lime Kiln Road
Housatonic Railroad Tracks
US 7
Kellogg Street Bridge
Boardman Street and Kellogg Street
Homes Road (Brush Hill Road)
East Mountain Viewpoint
Tom Leonard Lean-to
Lake Buel Road
Lake Buel Swamp Bog Bridge
MA 23
Blue Hill Road
Beartown State Park Road Bridge
The Ledges Viewpoint
Mount Wilcox Lean-to
Beartown Mountain Road
Jerusalem Road
Hop Brook Bridge
Tyringham Main Road
Webster Road
Goose Pond Road
Mohhekennuck Fishing and Hunting Club Ruins and Plaque
Massachusetts Turnpike/ I-90 Footbridges
US 20
Jacobs Ladder Highway
Elph's Lookout
Tyne Road
Beckett Mountain Fire Tower site
Finerty Pond Dam
Stanley Road/County Road
October Mountain Lean-to
West Branch Road
Pittsfield Road
Blotz Road
Warner Mountain Viewpoint
Kay Wood Lean-to
Grange Hall Road
Day Mountain Viewpoint
Housatonic and Depot Streets
Village of Dalton
High and Gulf Streets
MA 8A/9
Gore Pond Viewpoint
Town Line Marker
USGS Marker
The Cobbles Viewpoint
Church Street/Furnace Hill Road
Pittsfield and Adams Railroad Grade
Cheese Press Replica
Village of Cheshire
MA 8
Outlook Avenue
Old Adams Road
Mark Noepel Lean-to
Rockwell Road
Notch Road
Wilbur Clearing Lean-to
Pattison Road
Phelps Avenue Extension
Phelps Avenue
Catherine Street
MA 2
Town of North Adams
Massachusetts Avenue
Boston and Maine Railroad Footbridge
Hoosic Valley Textile Mill Ruins
Long Trail (1910) Marker

Vermont [87 named properties]
(Emblidge 1998; Hooke 2001)

Seth Warner Lean-to (1965)
Mill Road
Congdon Lean-to (1967)
Harmon Hill Viewpoint
VT 9
MacArthur Bridge

Melville Nauheim Shelter (1977)
Hell Hollow Brook Bridge
Porcupine Lookout
Little Pond Lookout
Glastenbury Lookout
Goddard Shelter (1985)
Glastenbury Fire Tower
Kid Gore Shelter (1971)
Caughnawaga Shelter (1931)
Story Spring Shelter (1963)
Black Brook Bridge
Arlington-West Wardsboro Road
Daniel Webster Speech Monument
Stratton Mountain Fire Tower
Stratton Road Shelter (1999)
Bigelow Shelter
Vondell Shelter
Winhall River Footbridge
Spruce Peak Shelter (1983)
VT 11/30
Bromley Mountain Tower
Styles Peak Viewpoint
Peru Peak Viewpoint
Peru Peak CCC Shelter (1935; rebuilt 1979 and 2000)
Baker Peak Viewpoint
Lost Pond Shelter (1965)
Big Branch Suspension Bridge
Big Branch Shelter (1963)
Lula Tye Shelter (1962; relocated to present locale 1972)
Little Rock Pond Shelter (1962; relocated to present locale 1972)
Horner Stone Brook Bridge
White Rocks Mountain Viewpoint
Greenwall Shelter (1962)
Sugar Hill Road
Wallingford Road/VT 140
Bragg Hill Road
Dutton Hill Road
Goddard Road
Elm Street
Minerva Hinchey Shelter (1969)
Airport Lookout
Clarendon Gorge Bridge
Rutland-Bellows Falls Highway/VT 103
Clarendon Lookout
Clarendon Shelter (1952)
Beacon Hill Viewpoint
Lottery Road
Lower Cold River Road
Governor Clement Shelter (1929)
Killington Peak
Cooper Lodge (1939)
Pico Camp Cabin (1959)
Long Trail Inn
US 4
Maine Junction AT/LP
Ben's Balcony Viewpoint
Mountain Meadows Inn
Thundering Brook Road
River Road
Stony Brook Shelter (1997)
Chateaugay Road
Lakota Lake Lookout
Lookout Farm Road
Wintturi Shelter (1994)
Barnard Gulf Road/VT 12
Dana Hill Viewpoint
Woodstock Stage Road
Bartlett Brook Road
Pomfret-South Pomfret Road
Dupuis Hill Viewpoint
Cloudland Road
Thistle Hill Shelter (1995)
Joe Ranger Road
Quechee-West Hartford Road Bridge
VT 14
1-89 Underpass
Happy Hill Shelter (1998)
US 5
I-91
Montshire Museum
Connecticut River Bridge

New Hampshire [74 named properties]
(Hooke 2001; Kodas, et al. 1999)

Village of Hanover
Velvet Rocks Shelter
Trescott Road
Three Mile Road
Moose Mountain Shelter
Goose Pond Road
Trapper John Shelter
Lyme-Dorchester Road
Dartmouth Ski Way (1933)
Lambert Ridge Viewpoint
Smarts Mountain Fire Tower
Fire Wardens Cabin
Eastman Ledges Viewpoint
Hexacuba Shelter
South Cube Viewpoint
North Cube Viewpoint
NH 25A
Atwill Hill Road
Ore Hill Shelter (1999)
Webster Slide Mountain Viewpoint
NH 25
Jeffers Brook Shelter
Sanitarium Road
Mount Moosilauke Viewpoint
Summit Hotel (Prospect House) Ruins (1880-1942)
Jobildunk Ravine Viewpoint
Beaver Brook Shelter (1993)
NH 112
Eliza Brook Shelter
South Kinsman Mountain Viewpoint
North Kinsman Mountain Viewpoint
Lonesome Lake Hut
US 3 Overpass
Mount Liberty Viewpoint
Mount Lincoln Viewpoint
Mount Garfield Viewpoint
Garfield Ridge Shelter (rebuilt 1970)
Galehead Hut
Guyot Shelter (rebuilt 1977)
Zealand Falls Hut
Zealand Valley Railroad Site
Willey House Road
NH 302
Maine Central Railroad
Saco River Bridge
Crawford Notch Overlook
Willey House Overlook
Mount Webster Viewpoint
Mount Jackson Viewpoint
Mizpah Spring Hut
Mount Pierce Viewpoint
Mountain Eisenhower Viewpoint
Mount Franklin Viewpoint
Mount Monroe Viewpoint
Lake of the Clouds Hut
Mount Washington Summit (1819-present)
Mount Washington Carriage/Motor Road (1851-present)
Pinkham Notch Visitor Center
NH 16
Mount Clay Viewpoint
Mount Jefferson Viewpoint
Madison Springs Hut
Mount Madison Viewpoint
Carter Notch Hut
Carter Dome Fire Tower Site
Imp Mountain Shelter
Mount Moriah Viewpoint
Rattle River Shelter
US 2
Hogan Road
Mount Hayes Viewpoint
Cascade Mountain Viewpoint
Gentian Pond Shelter (rebuilt 1974)
Mount Success DC 3 Crash Site (1953)

Maine [105 named properties]
(Cilley and Cilley 1996; Kodas, et al. 1999)

Carlo Col Shelter (rebuilt 1976)
Full Goose Shelter (rebuilt 1970)
Success Pond Road
Speck Pond Shelter
Old Speck Viewpoint
The Eyebrow Viewpoint
Baldpate Lean-to
Baldpate Mountain Viewpoints
ME 26
Frye Notch Shelter
Cascade Trail Viewpoint
East B Hill Road
Hall Mountain Lean-to
Wyman Mountain Viewpoint
South Arm Road
Black Brook Cliffs Viewpoint
Old Blue Mountain Viewpoint
Bemis Mountain Viewpoint
Bemis Mountain Lean-to
Maine Central Railroad Grade
ME 17
Sabbath Day Pond Lean-to
ME 4
Sandy River Footbridge
Piazza Rock Lean-to
Saddleback Mountain Viewpoint
The Horn Panorama
Poplar Ridge Lean-to
Spaulding Mountain Lean-to
Caribou Valley Road
ME 27
Stratton Pond Brook Road
Stratton Brook Footbridge
Horns Pond Lean-tos
Bigelow Mountain Panorama
Myron Avery Lean-to
Avery Peak Viewpoint
Little Bigelow Mountain Lean-to
East Flagstaff Road
1775 Arnold Military Route
Flagstaff Lake
Submerged Village of Flagstaff (flooded 1950)
Long Falls Dam Road
Roundtop Mountain Viewpoint
West Carry Pond Lean-to
Arnold Swamp Bridge
Historic Arnold Trail
Middle Carry Pond Road
Pierce Pond Lean-to
Pond Wooden Dam
Kennebec Ferry
Boise-Cascade Road
Pleasant Pond Lean-to
Pleasant Mountain Viewpoint
Bald Mountain Brook Lean-to
Moxie Bald Mountain Viewpoint
Moxie Bald Lean-to
Bangor & Aroostook Railroad Bed
Shirley-Blanchard Road
Buck Hill Viewpoint
Doughty Ponds Viewpoint
ME 15
Leeman Brook Lean-to
Big Wilson Tote Road
Iron Railroad Tracks
Wilson Valley Lean-to
Long Pond Stream Tote Road
Long Pond Stream Lean-to
Barren Mountain Viewpoints
Monument Cliff Viewpoint
Columbus Mountain Viewpoint
Chairback Gap Lean-to
Katahdin Iron Works Haul Road
Newhall Lean-to
The Hermitage Sporting Camp Site
White Cap Mountain Viewpoint
Logan Brook Lean-to
West Branch Ponds Road
East Branch Lean-to
Big and Little Boardman Mountains Viewpoints
Kokadjo-B Pond Road
Cooper Brook Falls Lean-to
Antlers Sporting Camp Site Jo-Mary Road
Potaywadjo Lean-to
Potaywadjo Logging Road
Mahar Tote Road
Nahmakanta Stream Road
Nahmakanta Lake Sporting Camp
Wadleigh Stream Lean-to
Nesuntabunt Mountain Viewpoint
Wadleigh Mountain Road
Pollywog Gorge Viewpoint
Pollywog Stream Bridge
Old Logging Dam
Rainbow Stream Lean-to
Rainbow Mountain Viewpoint
Hurd Brook Lean-to
Golden Road
Abol Bridge
Toll Dam
Daicey Pond Campground
Perimeter Road
Katahdin Stream Campground
Mount Katahdin/Baxter Peak Viewpoint